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AUTHOR Jallade, Jean-Pierre
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ABSTRACT

A statistical study of Brazilian education reveals that children of high-income, well-educated groups enjoy better educational opportunities and a usually higher rate of return on their educational investment than do the children of low-income groups. Poorer regions of the country, however, have a higher rate of return than do regions with a larger investment, indicating a developing equalization of the regional averages of individual incomes nationwide. Education subsidies and tax policies favor low-income, educated individuals, but the effectiveness of these policies is offset by the better educational opportunities available to the high-income educated, partly through the availability of high cost private education. The Brazilian government is taking the necessary first step towards achieving income equality by increasing educational opportunity through the extension of state-subsidized basic elementary and lower secondary education to all regions of the country. Equalizing employment opportunities within the relatively healthy Brazilian economy and reducing education wastage through improved efficiency in the educational system are the next steps. Subsidizing the education of low-income groups more fully than that of higher income groups would cost money but could be effective, while increased taxing of the educated probably would not. (Author/PGD)

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Basic Education and Income Inequality in Brazil: The Long-Term View

World Bank Staff Working Paper No. 268

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Prepared by: Jean-Pierre Jallade
Education Department (CPS)
Derived from Research Project No. RPO-244

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BASIC EDUCATION AND INCOME INEQUALITY IN BRAZIL:

THE LONG-TERM VIEW

This paper attempts to elucidate the long-term impact of basic education on income inequality in Brazil. It does so, first, by examining how investment in basic education affect incomes and, second, by assessing the extent to which government involvement in the financing of education services and the taxing of the returns to education investment contributes to achieve a more equitable distribution of income.

On the basis of the empirical evidence available in Brazil, it is possible to suggest that (i) education per se cannot significantly reduce inequality, (ii) government policies in terms of education subsidies and taxes on lifetime earnings do not show a clear redistribution pattern, and (iii) there exists effective policy tools in the area of employment, education wastage, cost recovery practices which could help bridge the gap between rates of return to education and reduce income inequality.

The attached paper is a fifth and last in a series of reports prepared in connection with the research program being carried out by the Education Department (Central Projects Staff) on education finance in Latin America. Four other studies, namely, "The Financing of Education: An Examination of Basic Issues" (Bank Staff Working Paper No. 157, July 1973), "Public Expenditures on Education and Income Distribution in Colombia" (World Bank Occasional Papers No. 18, The Johns Hopkins Press, 1974), "Student Loans in Developing Countries: An Evaluation of the Colombian Performance" (Bank Staff Working Paper No. 182, June 1974), and "Costing and Financing of Education in LDCs: Current Issues" (World Bank Staff Working Paper No. 216, May 1975) have already been published under this program.

Prepared by: Jean-Pierre Jallade
Education Department (CPS)
Derived from Research Project No. RPO-244

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Basic Education and Income Inequality in Brazil: The Long-Term View

1. Introduction

The purpose of this paper is to elucidate the long-term impact of basic education on income inequality in Brazil. In order to do so, we shall first examine how investment in basic education affect incomes in the long-run and, second, the extent to which government involvement in the financing of education services and the taxing of the returns to education investment contributes to achieve a more equitable distribution of income.

The contribution of this paper to the first issue should be viewed as part of the growing body of literature trying to deepen our understanding about the relationships between education and incomes and, as a corollary, about the impact of educational development on the distribution of income. The second aspect of the problem is treated more directly as a public policy issue. Once the impact of education on earnings has been recorded, the next question to raise is: What (if anything) can education authorities do or should do about it? This, of course, assumes that governments are in some ways interested in shaping the final distribution of income.

The present analysis is more concerned with casting education in the framework of a growth-cum-redistribution strategy than with assessing the exact importance of education vis-a-vis other factors on income inequality Making sure that things work in the right direction - in that case, that education is conducive towards greater equality - is sometimes just as important and often more relevant to policy decisions than investigating the final "impact" of education in income distribution.

This paper disregards the short-term, static impact of the provision of educational services financed out of public revenue on income.[1/] It takes a more long-term, dynamic approach focusing on one particular kind of investment transfers, namely education, as part of a strategy of income equalization. As S. M. Miller[2/] put it, "...in the static approach, which is the usual practice, redistribution of the current flow of income is pursued through taxation and transfer. The dynamic approach attempts to alter over time the future patterns of incomes and asset accumulation."

The starting point is thus that education improves the ability to generate earnings in the long-run but that it may do so differently according to socio-economic groups. To be specific, assuming that education is an investment generating returns, the contribution of education to earnings inequality will depend on:

(i) the size of the education investments made by the various socio-economic groups;

(ii) the rates of return expected on these investments by each group; and

(iii) the impact of government intervention in providing and taxing education services.

To some extent, this analysis is also an enquiry into the existing inequality of lifetime earnings profiles among groups enjoying the same level of education and into the scope for government action in this area through subsidies and taxes. Because of this focus on inequality, "disaggregation" is essential to the analysis. But it also stems from a dissatisfaction with macro, country - or economy - wide approaches to social problems as they have often proved

1/ See Public Expenditures on Education and Income Distribution in Colombia, Jean-Pierre Jallade, World Bank Staff Occasional Papers No. 18, The Johns Hopkins Press, 1974.

2/ S.M. Miller "Affecting the Primary Distribution of Income", OCED, January 1976 Draft, page 14.

to be far too cumbersome to be really useful for policy considerations. The case for disaggregate analysis is even stronger in the realm of education policy because the education sector is big and changes or innovations are, at least initially, "marginal" in scope. Because everything is not going to change overnight, disaggregate knowledge is required to elaborate educational policies and pinpoint target groups eligible for remedial programs in an appropriate way. The present analysis is expected to be a step in this direction to the extent that it looks at how various socio-economic groups fare vis-a-vis investment in education rather than at overall patterns of educational growth.

The country under study is Brazil at the beginning of the seventies. This country is an interesting case of development economics because it has experienced rapid economic growth together with worsening income distribution during the sixties - a troubling situation for one school of thought in the development field. At the same time, this adverse performance on income distribution occurred in spite of a rapid employment growth in all regions - a case that certainly deserves the attention of those who support a growth-cum-redistribution-through-employment strategy to cure the ills of the developing world.

One should give A. Fishlow [1/] the credit for blowing the whistle on the deterioration of income distribution during the years of the Brazilian "miracle". His main conclusions were subsequently upheld, if slightly qualified, by Brazilian economists, notably C.G. Langoni [2/] In spite of a more recent

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1/ "Brazilian Size Distribution of Income" by Albert Fishlow in The American Economic Review, May 1972, Paper and Proceedings of the 84th Annual Meeting of the American Economic Association, New Orleans, Louisiana, December 27-29, 1971.

2/ Distribuicao da Renda e Desenvolvimento Economico de Brasil, by Carlos Geraldo Langoni, Editora Expressao e Cultura, Rio de Janeiro, 1973.

study[1] showing that, if the problem is rather one of a "poverty standard" to be met rather than one of a gap between income groups to be narrowed, the picture does not look so bad after all, the deterioration of income distribution in Brazil between 1960 and 1970 is now an accepted fact. The debate has now shifted to elucidating the causes of this deterioration.

One of the main conclusions of Langoni's study was precisely that the distribution of education in the Brazilian labor force, measured by school attendance became more unequal during the sixties and that this accounted, to a large extent, for the observed increase in income inequality. This view was later criticized by M. Carnoy[2] who arrived at an unchanged distribution of investment in education during the period by weighing school attendance with the relative costs of the various levels of schooling.

In an interesting essay, Samuel Morley[3] attempts to reconcile the progress made by the country on the employment front[4] with the deterioration in the income distribution. He states that many new jobs created "tended to be good jobs which must reflect in part the relatively high skill intensity of the dynamic sectors during recent Brazilian growth". This highly skill-intensive pattern of development, coupled with a "steady

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1/ "A Reexamination of Brazilian Economic Development in the 1960's" by G.S. Fields, Discussion Paper no. 235, Economic Growth Center, Yale University, April 1975.

2/ "Distribuicao da Renda Desenvolvimento Economico de Brazil: un Comentario", M. Carnoy in Revista de Administracao de Empresas. According to Carnoy, as the education distribution in terms of school attendance became more unequal during the sixties, there was a counterbalancing trend towards an equalization in the costs of the various levels of schooling.

3/ "Changes in Employment and the Distribution of Income During the Brazilian Miracle" by S.A. Morley, Working Papers No. 43, World Employment Program Research, ILO, Geneva, July 1976.

4/ As assessed by the fall in underemployment, the rise in female participation rates and the decline in the share of low-paying occupations such as domestic servants.

worsening in the relative position of the unskilled" - apparently as a result of wage policies emphasizing monetary stabilization and high investment rates - explains the deterioration in the distribution of income. It also accounts for the rapid development of higher education in Brazil during this period.

In one of his latest work, Fishlow[1/] also questions Langoni's view that the principal factor responsible for income inequality is unequal access to education and attempts to reinstate the role of physical capital (ownership of assets) in explaining income inequality. In his view, an overemphasis on education leads to disregard other important factors such as land tenure, wage policy, occupation, etc.... As far as the role of education in distributing income is concerned, he states that "educational policy should not be made to bear a burden that exceeds its capability. Ease in obtaining consensus for more expenditure on schooling, in contrast to the serious strains posed by outright redistribution of wealth, does not make education the sole or ideal investment for greater equality. But more properly understood, educational investment can at least cease to be a perverse influence and turned to rightful advantage."

What Fishlow meant by the last sentence was that, within the confines of educational policy, emphasis upon primary education to the detriment of higher education - rather than the reverse which actually happened - could contribute to reduce inequality. In doing so, he acknowledges that education has some role to play in reducing inequality - even if it is smaller than that attributed by Langoni.

The present paper attempts to take the debate one step further by highlighting the possibilities and limitations of education in promoting long range equality. It focuses on basic education only - that is primary and lower secondary education - because it is the only form of education that is

1/ "Brazilian Income Size Distribution - Another Look", Albert Fishlow (mimeographed).

widely distributed among all segments of the population. The analysis makes heavy use of the tools of human capital theory - i.e. the social and private rates of return - but shares neither the premises of the theory nor its ambitions in terms of resource allocation. To the extent that dynamic conclusions are reached on the basis of a set of data which essentially describes income, education and other variables for the Brazilian population at a single point in time, the present analysis shares the virtually unavoidable limitations of human capital theory when it is applied to solving long-term, social welfare problems. It is, nevertheless, carried out in three distinct geographical areas - Brazil as a whole, the state of Sao Paulo and the state of Pernambuco - in order to check whether the findings hold at different stagesof economic development.

II. Basic Education and Income Inequality

As was mentioned in the introduction, the extent to which education affects income inequality depends on the size of the investment in education made by the various income groups and the rate of return on this investment expected by each group. Tables 1 to 3 present, for each of the three geographical regions, statistics on income and educational attainment of various groups in the labor force, enrollment ratios for the school age population and expected rates of return to education.[1/] In Table 1, the total population of Brazil, was broken down in fourteen socio-economic groups using sex, place of residence (rural/urban), place of origin (migrants/non-migrants) and socio-economic background.[2/] Average monthly income in the highest groups (Total males - non-farm) is 13 to 14 higher than in the lowest group - females with a low socio-economic background engaged in farming. The average number of years of schooling of the labor force population varies accordingly from 4.5 years of schooling in the best educated group - Non-farm males, migrants from urban areas - to 0.8 years of schooling in the least educated groups, that is to say males and females with a low socio-economic background.

The third column of the table shows that, by and large, high-income groups manage to enroll a greater proportion of their school-age children

1/ See Appendix: A Note on Rates of Return Calculation.
2/ See Statistical Annex.

than low-income groups: for instance, 77.5% of the children coming from the Non-farm, male category are enrolled as against 37.2% of those in the category of Farm-female with a low socio-economic background. In other words, the size of the education investment made by the children is clearly related to the level of income and/or education of the parents.

The differences in expected rates of return to education are also striking. With few exceptions, the rates of return to primary education tend to be highest for the highest income group - Non-farm males - and lowest for the lowest income group - that of farm females.

The rates of return to lower-secondary education - which are all smaller than in the case of primary education as one could expect - show a less clear pattern. There are only small differences between males and females among the Non-farm population and, in the farming population, some female groups do better than their male counterparts.

All in all, Table 1 provides credence to the hypothesis that education per se cannot reduce inequality in the long run. Rather the contrary since the higher-income categories are in a better position to enroll their children in basic education and since these children can also expect a rate of return on this investment which is usually higher - or at least equal - than that expected by their counterpats in the lower-income categories.

Table 2 and 3 which provide similar information for the states of Sao Paulo and Pernambuco confirm this finding with one important exception: although the size of education investment - as assessed by enrollment ratios - is higher across the board in the relatively well-developed state of Sao Paulo than it is in underdeveloped Pernambuco, the rates of return on this investment are generally lower in the former than in the latter. Thus improved access to education in a poor state may, to some extent, contribute to bridge the income gap between poor and rich states provided the differences in rates of return are big enough to offset the differences in access to education and hold over

Table 1

BRAZIL: Education and Earnings Inequality

1972

	Average Number of Years of Schooling (1970)	Monthly Earnings in Cruzeiros	Enrollment Ratios in Basic Education* (1970)	Social Rates of Return to: Lower Secondary Schooling (%)	Primary Schooling (%)
Total Males - Non-Farm	3.6	873	77.5	13.1	23.5
Migrants from urban areas	4.5	688	79.9	12.3	21.2
Migrants from rural areas	2.4	691	69.1	10.9	20.3
Males with a low socio-economic background	2.4	247	63.1	10.5	22.7
Total Males - Farm	1.0	252	45.0	11.0	21.1
Migrants from rural areas	1.1	316	45.8	9.5	19.1
Males with a low socio-economic background	0.8	91	37.2	6.5	18.5
Total Females - Non-Farm	3.3	380	76.8	12.6	21.2
Migrants from urban areas	3.8	520	77.5	11.4	16.5
Migrants from rural areas	2.0	247	66.7	11.3	21.9
Females with a low socio-economic background	2.2	187	64.4	11.2	30.6
Total Females - Farm	1.0	112	44.5	10.4	13.9
Migrants from rural areas	1.0	96	43.2	10.0	14.7
Females with a low socio-economic background	0.8	64	37.2	11.5	15.7

Sources: First column : Statistical Annex, Table IV-1.
Second column: Unpublished tabulations drawn from the 1972 Household Survey and the 1970 Population Census (IBGE).
Third column : Statistical Annex, Tables V-I and V-2.

* Enrollment ratios are defined as the proportion of persons between 6 and 14 years of age enrolled in Primary and Lower Secondary Education.

Table 2

SAO PAULO: Education and Earnings Inequality

	Average Number of Years of Schooling (1970)	Monthly Earnings in Cruzeiros	Enrollment Ratios in Basic Education[1] (1970)	Social Rates of Return to: Lower Secondary Schooling (%)	Primary Schooling (%)
Total Males - Non-Farm	4.0	1051	79.1	11.9	14.3
Migrants from urban areas	4.4	1330	79.9	11.7	13.2
Migrants from rural areas	2.5	734	72.0	10.8	12.4
Males with a low socio-economic background	3.0	370	49.9	9.2	13.8
Total Males - Farm	1.8	370	60.8	10.0	11.4
Migrants from rural areas	1.5	388	58.2	9.1	11.8
Males with a low socio-economic background	1.7	144	42.5	5.4	7.0
Total Females - Non-Farm	3.5	494	76.6	10.4	12.8
Migrants from urban areas	3.8	589	76.5	10.3	10.4
Migrants from rural areas	2.0	298	67.2	8.7	16.4
Females with a low socio-economic background	2.4	329	48.6	9.4	14.0
Total Females - Farm	1.6	186	55.6	3.6[2]	8.0
Migrants from rural areas	1.3	135	53.0	1.9[2]	- 3.8
Females with a low socio-economic background	1.3	118	39.2	2.8[2]	3.0

Sources: First column : Statistical Annex, Table IV-2.
Second column: Unpublished tabulations drawn from the 1972 Household Survey and the 1970 Population Census (IBGE).
Third column : Statistical Annex, Tables V-3 and V-4.

1/ Enrollment ratios are defined as the proportion of persons between 6 and 14 years of age enrolled in Primary and Lower Secondary Education.

2/ The lifetime earnings profile stops at 35 years of age because of lack of observations for older age groups.

Table 3

PERNAMBUCO: Education and Earnings Inequality

1972

	Average Number of Years of Schooling (1970)	Monthly Earnings in Cruzeiros	Enrollment Ratios in Basic Education* (1970)	Social Rates of Return to: Lower Secondary Schooling (%)	Social Rates of Return to: Primary Schooling (%)
Total Males - Non-Farm	2.7	622	72.1	15.1	18.2
Migrants from urban areas	3.7	1011	74.4	15.1	18.8
Migrants from rural areas	1.7	517	57.6	11.8	16.7
Males with a low socio-economic background	1.7	150	56.2	12.4	17.5
Total Males - Farm	0.5	134	33.5	n.a.	7.2
Migrants from rural areas	0.5	169	29.2	n.a.	6.2
Males with a low socio-economic background	0.4	58	30.0	n.a.	9.0
Total Females - Non-Farm	2.6	230	74.3	15.4	17.0
Migrants from urban areas	3.3	331	75.6	14.4	13.3
Migrants from rural areas	1.6	173	58.6	15.4	20.9
Females with a low socio-economic background	1.8	108	59.4	18.3	32.3
Total Females - Farm	0.5	68	36.9	n.a.	3.8
Migrants from rural areas	0.5	82	32.4	n.a.	- 3.6
Females with a low socio-economic background	0.5	41	33.2	n.a.	7.8

Sources: First column : Statistical Annex, Table IV-3.
Second column : Unpublished tabulations drawn from the 1972 Household Survey and the 1970 Population Census (IBGE).
Third column : Statistical Annex, Tables V-5 and V-6.

* Enrollment ratios are defined as the proportion of persons between 6 and 14 years of age enrolled in Primary and Lower Secondary Education.

time. It is also worth noticing that lower secondary education is a statistically unknown commodity in rural Pernambuco.

III. Social vs. Private Rates of Return to Education

The preceding section has shown that investment in education is unlikely to contribute to a decrease of income inequality first because higher income groups have better access to education than lower income groups and, second, because rates of return on education investment vary among socio-economic groups and are unlikely to offset the impact of unequal access to education on the initial income distribution. The fact that socio-economic groups fare differently in terms of both access and "pay off" to education raises an important policy issue, namely, the extent to which government policies concerning the financing of education and the taxing of the returns to education are responsible for the observed pattern and could be more clearly geared towards reducing income inequality.

Government involvement in this area takes place at two stages, namely through the subsidizing of educational services and the taxing of high incomes resulting from education. Human capital theory provides a convenient device to assess the overall government involvement in the education sector by focusing on the difference between the private and the social rates of return. In this connection, it is recalled that the social rate of return is computed on the basis of before-tax earnings and total costs of education (including public subsidies) as compared with after-tax earnings and private costs (excluding public subsidies) for the private rate of return. As a result the difference between the private and the social rates reflects, on the benefit side, the tax stream paid by educated people and, on the cost side the public subsidy required to reach the level of education under consideration.

The private rate is usually superior to the social rate and the difference between the two gives a measure of government involvement in education. A big difference between the two rates means a high level of overall or "net" subsidization (high public subsidies to reach a certain level of education and low taxes afterwards) while a small difference means that the subsidies received to reach a certain level of education are nearly offset by the taxes paid afterwards by educated individuals during their active lives.

Tables 4 to 6 show the private and social rates of return on education as well as the differences between the two rates for each socio-economic group. In Brazil - Table 4 - the differences between private and social rates of return on lower secondary and primary schooling are smaller in the case of the better-off groups (Non-farm males) than in the case of the worse-off group - females engaged in farming activities - which means that the former are less subsidized that the latter. In the same way, people engaged in farming activities are more subsidized than those in non-farming activities. Farming males, enjoy a level of subsidization for primary schooling similar to that of lesser-paid farming females. Within the four major socio-economic groups, migrants are systematically less subsidized than non-migrants. From the income distribution viewpoint, this does not matter much as far as migrants from urban areas are concerned because they often fare as well as non-migrants in terms of earnings and educational attainment. This is not the case, however, for migrants from rural areas who should be more subsidized than non-migrants if the income gap between the two is to be bridged. Disadvantaged groups, that is those with a low socio-economic background, are equally or more subsidized than other groups.

All in all, it thus appears that, with the exception of the migrants from rural areas, government involvement in subsidizing the provision of

Table 4

BRAZIL: Private and Social Rates of Return to Basic Education

Socio-Economic Characteristics	Lower Secondary Schooling			Primary Schooling		
	Private Rates of Return (%)	Social Rates of Return (%)	Difference Between Private & Social Rates	Private Rates of Return (%)	Social Rates of Return (%)	Difference Between Private & Social Rates
Total Males - Non-farm	13.9	13.1	0.8	24.7	23.5	1.2
Migrants from urban areas	12.9	12.3	0.6	21.9	21.2	0.7
Migrants from rural areas	11.5	10.9	0.6	20.9	20.3	0.6
Males with a low socio-economic background	11.4	10.5	0.9	24.2	22.7	1.5
Total Males - Farm	12.5	11.0	1.5	24.1	21.1	3.0
Migrants from rural areas	10.9	9.5	1.4	20.7	19.1	1.6
Males with a low socio-economic background	7.5	6.5	1.0	22.5	18.5	4.0
Total Females - Non-farm	14.1	12.6	1.5	22.7	21.2	1.5
Migrants from urban areas	12.5	11.4	1.1	17.0	16.5	0.5
Migrants from rural areas	12.3	11.3	1.0	23.1	21.9	1.2
Females with a low socio-economic background	12.6	11.2	1.4	35.2	30.6	4.6
Total Females - Farm	13.4	10.4	3.0	16.8	13.9	2.9
Migrants from rural areas	12.6	10.0	2.6	17.3	14.7	2.6
Females with a low socio-economic background	14.6	11.5	3.1	18.6	15.7	2.9

Table 5

SAO PAULO: Private and Social Rates of Return to Basic Education

Socio-Economic Characteristics	Lower Secondary Schooling			Primary Schooling		
	Private Rates of Return (%)	Social Rates of Return (%)	Difference Between Private & Social Rates	Private Rates of Return (%)	Social Rates of Return (%)	Difference Between Private & Social Rates
Total Males - Non-farm	12.7	11.9	0.8	15.1	14.3	0.8
Migrants from urban areas	12.4	11.7	0.7	13.8	13.2	0.6
Migrants from rural areas	11.4	10.8	0.6	12.9	12.4	0.5
Males with a low socio-economic background	9.8	9.2	0.6	14.9	13.8	1.1
Total Males - Farm	11.0	10.0	1.0	12.8	11.4	1.4
Migrants from rural areas	10.2	9.1	1.1	12.9	11.8	1.1
Males with a low socio-economic background	6.6	5.4	1.2	9.1	7.0	2.1
Total Females - Non-farm	11.6	10.4	1.2	13.8	12.8	1.0
Migrants from urban areas	11.4	10.3	1.1	11.1	10.4	0.7
Migrants from rural areas	9.6	8.7	0.9	17.7	16.4	1.3
Females with a low socio-economic background	10.8	9.4	1.4	15.7	14.0	1.7
Total Females - Farm	7.1	3.6	3.5	9.7	8.0	1.7
Migrants from rural areas	4.0	1.9	2.1	- 3.6	- 3.8	- 0.2
Females with a low socio-economic background	5.6	2.8	2.8	3.6	3.0	0.6

Table 6

PERNAMBUCO: Private and Social Rates of Return to Basic Education

Socio-Economic Characteristics	Lower Secondary Schooling			Primary Schooling		
	Private Rates of Return (%)	Social Rates of Return (%)	Difference Between Private & Social Rates	Private Rates of Return (%)	Social Rates of Return (%)	Difference Between Private & Social Rates
Total Males - Non-farm	15.7	15.1	0.6	19.0	18.2	0.8
Migrants from urban areas	15.5	15.1	0.4	19.6	18.8	0.8
Migrants from rural areas	12.1	11.8	0.3	17.1	16.7	0.4
Males with a low socio-economic background	13.1	12.4	0.7	18.9	17.5	1.4
Total Males - Farm	n.a.	n.a.	n.a.	8.0	7.2	0.8
Migrants from rural areas	n.a.	n.a.	n.a.	6.7	6.2	0.5
Males with a low socio-economic background	n.a.	n.a.	n.a.	10.0	9.0	1.0
Total Females - Non-farm	17.2	15.4	1.8	19.3	17.0	2.3
Migrants from urban areas	15.8	14.4	1.4	14.4	13.3	1.1
Migrants from rural areas	16.7	15.4	1.3	23.5	20.9	2.6
Females with a low socio-economic background	20.5	18.3	2.2	42.1	32.3	9.8
Total Females - Farm	n.a.	n.a.	n.a.	4.7	3.8	0.9
Migrants from rural areas	n.a.	n.a.	n.a.	- 3.5	- 3.6	- 0.1
Females with a low socio-economic background	n.a.	n.a.	n.a.	8.9	7.8	1.1

education and taxing its returns is oriented toward a decrease of income inequality. A similar picture for the developed state of Sao Paulo emerges in Table 5 with the exception, however of the bottom group - farming females with a low socio-economic background - who are less subsidized than the average farming female.

In the poor state of Pernambuco, only non-farm females are clearly better-off than non-farm males while the whole farming population enjoys practically the same level of subsidy as the better-off group of non-farm males. This,it seems, is a clear indication that very little, if any, income redistribution between rural and urban groups is taking place through investment in education.

IV. Subsidizing and Taxing Education Investment: The Viewpoint of the State

Will the observed pattern of subsidy - as assessed by the differences between private and social rates of return be sufficient to bring about changes in the distribution of income? Human capital theory does not permit to answer this question because rates of return focus exclusively on the individuals who invest in education (private rate) or society at large (social rate). In other words, it is an "allocative" approach which seeks to maximize individual incomes or social welfare by concentrating on the costs incurred by and the returns accruing to educated individuals or society. What is needed here is what could be called, for want of a better word, a "redistributive" approach that seeks to compare and, possibly, alter the "net" impact of government involvement in the financing and taxing of education across socio-economic groups in order to improve income distribution. A major difference between the "allocative" and "distributive' approach is that while the former focuses only on educated individuals, the latter deals with the relative positions of the various socio-economic groups as a whole - including both the persons who invest and those who do not invest in education - vis-a-vis subsidization and taxation of education investment by the state.

To put it in another way, it is not enough for redistributive purposes to know that the few disadvantaged who gain access to a certain level of education are more subsidized than the many coming from privileged groups. One also has to relate the levels of subsidization to the numbers able to get advantage of it.

The point can be illustrated by a comparison of the situation of males and females vis-a-vis investment in education. According to the "allocative" theory, educated females are probably subsidized by the state to a greater extent than educated males as females receive roughly the same government subsidies for their education as males but pay back less taxes - because they have lower earnings - than males. According to the "redistributive" theory, the ability of females as a group to get advantage of education subsidies may be lower than that of males because the number of educated women is lower than that of educated men.

A convenient way to assess how the various socio-economic groups fare with regard to both the subsidization of education investment and the taxation of the returns to this investment is to adopt the viewpoint of the state. Instead of looking at rates of return from the viewpoint of individuals or society, one could look at how subsidies are distributed by the state among socio-economic groups. In this connection, the taxes levied on the returns to education will be interpreted as a way for the government to get back (part of) the money spent in subsidizing access to education investment. Taxes will be the benefit stream of government subsidization of education while the outlays incurred to subsidize individuals to reach a certain level of educational attainment will be the cost stream. The "net" amount of subsidies distributed by the government to each educated person will be assessed by the present value of all the taxes paid on the returns to this education by the educated person during its entire lifetime minus the subsidies received to reach this level of educational attainment. The "net"

subsidy per educated person will then be multiplied by the proportion of people reaching the level of education under consideration in each socio-economic group.

Such an analysis was carried out in the case of Brazil at the beginning of the seventies. The main results which summarize the distributive impact of the subsidizing of (and the taxing of the returns to) basic education in Brazil are presented in Table 7.[1/] All persons with lower secondary schooling receive "net" government subsidies which are much higher than persons with primary schooling only. There is thus a distinctive premium in staying in the system as long as possible. When comparing the level of subsidy among groups, the first two columns in this Table show that the present values of "net" government subsidies allocated to each educated individual are higher for females and farm workers than for males and non-farm workers respectively.[2/] Educated individuals in the sub-groups "with a low socio-economic background" are also usually getting marginally higher subsidies than their more privileged counterparts within the groups as a whole (except in the female-farm category). Migrants are less or equally subsidized than the average educated individual in the category. All in all, it seems, therefore, that educated individuals from low-income groups are slightly more subsidized by the government than educated individuals from high income groups.

When the structure of "net" subsidies for the various levels of education is weighed by the level of educational attainment of each socio-economic group (columns 3 and 4 in Table 7), the average present value of "net" government

1/ All present values shown in this analysis were computed on the basis of a 20% discount rate. Furthermore, it has been assumed in this section that all increased tax revenues are attributed to education. This is a logical consequence of an earlier assumption which attributes all income differentials to education: see Appendix for justification.

2/ The "plus" sign points to a net benefit for the government, that is, a corresponding "loss" for individuals.

subsidies accruing to each economic group can be computed on a per capita basis: last column of Table 7. As far as the main categories are concerned (male versus females, farm versus non-farm) the emerging pattern of subsidization favors low-income groups as against high-income groups. Within each categories, however, disadvantaged sub-groups such as migrants from rural areas and males or females with a low socio-economic background are less subsidized than the average individual in the corresponding category. One exception to this rule is the male-non-farm category which has a strongly redistributive pattern of subsidy.

In the state of Sao Paulo, the relative levels of government subsidies per capita also favors low-income categories as against high income categories but, within each main categories, the level of subsidy is practically the same for all sub-groups regardless of their income levels. There is an exception, however, for the female migrants from rural areas who receive below-the-average subsidies because of their low level of educational attainment.

A similar picture emerges from the state of Pernambuco (Table 9). Furthermore, it should be noted, in this region, per capita subsidies are, on an average, slightly below those for Brazil as a whole which are themselves far below those of Sao Paulo. In other words, government involvement in providing and taxing education investment may contribute to widen rather than bridge the income gap between more developed and less developed regions.

To conclude, the impact of government's financing and taxing policies on incomes is, at best, a mixed one. No clear and definite redistributive pattern emerges from the analysis. In many cases, the improvement in income inequality that could result from the subsidies received by educated

Table 7

BRAZIL: Allocation of "Net" Government Subsidies for Basic Education Among Socio-Economic Groups

Socio-Economic Groups	Present Value of "Net" Subsidies Allocated by the Government to Each Individual with:		Proportion of People in Each Group with:		Per Capita Average of Present Value of "Net" Government Subsidies for Basic Education in Group
	Lower Secondary Schooling (Cruzeiros)	Primary Schooling (Cruzeiros)	Lower Secondary Schooling (%)	Primary Schooling (%)	(Cruzeiros)
Total Males - Non-Farm	- 1,640	+ 327	19	81	- 47
Migrants from urban areas	- 1,530	+ 490	23	77	- 25
Migrants from rural areas	- 1,630	+ 430	14	86	- 142
Males with a low socio-economic background	- 1,820	- 150	15	85	- 401
Total Males - Farm	- 2,370	- 500	5	95	- 594
Migrants from rural areas	- 2,380	- 480	5	95	- 575
Males with a low socio-economic background	- 2,420	- 530	3	97	- 587
Total Females - Non-Farm	- 1,950	- 70	21	79	- 465
Migrants from urban areas	- 1,880	+ 40	24	76	- 421
Migrants from rural areas	- 1,880	+ 50	15	85	- 240
Females with a low socio-economic background	- 2,010	- 110	16	84	- 414
Total Females - Farm	- 2,390	- 560	5	95	- 652
Migrants from rural areas	- 2,380	- 540	3	97	- 595
Females with a low socio-economic background	- 2,380	- 560	3	97	- 615

Source: Statistical Annex.

Table 8

SAO PAULO: Allocation of "Net" Government Subsidies for Basic Education Among Socio-Economic Groups

Socio-Economic Groups	Present Value of "Net" Subsidies by the Government to Each Individual with:		Proportion of People in Each Group with:		Per Capita Average of Present Value of "Net" Government Subsidies for Basic Education in Group
	Lower Secondary Schooling (Cruzeiros)	Primary Schooling (Cruzeiros)	Lower Secondary Schooling (%)	Primary Schooling (%)	(Cruzieros)
Total Males - Non-Farm	- 2,310	- 290	22	78	- 734
Migrants from urban areas	- 2,260	- 220	25	75	- 730
Migrants from rural areas	- 2,320	- 250	17	83	- 602
Males with a low socio-economic background	- 2,450	- 390	20	80	- 802
Total Males - Farm	- 3,070	- 1,190	9	91	- 1,359
Migrants from rural areas	- 3,080	- 1,190	9	91	- 1,360
Males with a low socio-economic background	- 3,140	- 1,220	8	92	- 1,374
Total Females - Non-Farm	- 2,580	- 630	24	76	- 1,098
Migrants from urban areas	- 2,540	- 610	26	74	- 1,112
Migrants from rural areas	- 2,500	- 450	15	85	- 758
Females with a low socio-economic background	- 2,680	- 760	20	80	- 1,144
Total Females - Farm	- 3,030	- 1,230	6	94	- 1,338
Migrants from rural areas	- 3,080	- 1,260	7	93	- 1,387
Females with a low socio-economic background	- 3,080	- 1,280	6	94	- 1,388

Source: Statistical Annex.

Table 9

PERNAMBUCO: Allocation of "Net" Government Subsidies for Basic Education Among Socio-Economic Groups

Socio-Economic Groups	Present Value of "Net" Subsidies Allocated by the Government to Each Individual with:		Proportion of People in Each Group with:		Per Capita Average of Present Value of "Net" Government Subsidies for Basic Education in Group
	Lower Secondary Schooling (Cruzeiros)	Primary Schooling (Cruzeiros)	Lower Secondary Schooling (%)	Primary Schooling (%)	(Cruzeiros)
Total Males - Non-Farm	- 630	+ 90	13	87	- 4
Migrants from urban areas	- 510	+ 180	18	82	+ 239
Migrants from rural areas	- 750	+ 150	9	91	+ 204
Males with a low socio-economic background	- 760	- 30	11	89	- 110
Total Males - Farm	- 1,130	- 380	3	97	- 403
Migrants from rural areas	- 1,090	- 380	4	96	- 408
Males with a low socio-economic background	- 1,140	- 390	-	100	- 390
Total Females - Non-Farm	- 870	- 210	15	85	- 309
Migrants from urban areas	- 870	- 180	21	79	- 325
Migrants from rural areas	- 770	- 150	11	89	- 218
Females with a low socio-economic background	- 760	- 190	14	86	- 270
Total Females - Farm	- 1,150	- 410	3	97	- 432
Migrants from rural areas	- 1,150	- 410	3	97	- 432
Females with a low socio-economic background	- 1,150	- 410	3	97	- 432

Source: Statistical Annex.

individuals is offset by the unequal distribution of educational opportunities among groups.

V. Equalizing Rates of Return to Education: Alternatives for Government Policy

The purpose of this section is to survey a few policy alternatives which may contribute to redirecting government intervention more clearly towards a reduction of income inequality. Four sensitivity analyses aiming at incorporating the impact of such phenomena as employment, wastage, changes in tax burdens and cost recovery practices were carried out. They are considered as attempts to assess the relative effectiveness of various policies aiming at altering the existing pattern of rates of return to education in order to improve the distribution of income among socio-economic groups.

1. Adjusting lifetime earning profiles for employment: Employment is an important factor in determining earnings. According to the data on the employment situation of individuals by levels of education and socio-economic characteristics shown in the Statistical Annex (Tables III-1 to III-9), some groups work a larger number of hours per week than others: 44 hours for non-farm males, age 15-19, with lower secondary schooling, for instance, as against 37 hours for farm females.

Part of the higher income of the former groups is due to the large number of hours worked per week. Adjusting lifetime earning streams for employment

in these two categories would lead to a reduction in the differences between lifetime earnings and, other things being equal, to a reduction in the differences between rates of return.

The lifetime earnings data shown in Tables I-1 to I-9 were systematically adjusted with the employment statistics presented in Tables III-1 to III-9,[1/] first by computing hourly wage rates and, second, by multiplying these rates by the same "standard" number of hours worked per year as follows:

$$\frac{\text{Monthly Earnings}}{\text{Number of hours worked per week} \times 4.33} \times 45 \times 52 = \text{Yearly earnings}$$

The impact of this adjustment on social rates of return to lower secondary and primary schooling is quite significant: Table 10 Controlling for the employment factor yields rates of return to education which are inferior by one to two percentage points in the case of lower secondary schooling and by two to 3.5 percentage points in the case of primary schooling to those computed earlier. The decrease varies according to socio-economic groups and, by and large, leads to smaller differences between the rates of return of the various groups. It is also much more significant in the case of lower secondary schooling than in the case of primary schooling.

The lessons that can be drawn from this analysis are two-fold:

- first, equalizing employment opportunities significantly contributes to decreasing differences in rates of return to education among socio-economic groups;
- second, a more active employment policy aiming at longer working weeks for the disadvantaged groups than for the relatively well-off groups would be a significant step towards the equali zation of rates of return among groups. In the case of lower secondary schooling, the former groups would require a working week about 20%

TABLE 10 Sensitivity Analyses on Social Rates of Return

Socio-Economic Groups	Social Rates of Return to Lower Secondary Schooling			Social Rates of Return to Primary Schooling		
	Non Adjusted (1)	Adjusted for: Employment	Wastage	Non Adjusted (1)	Adjusted for: Employment	Wastage
Brazil						
Total Males - Non-farm	13.1	11.1	12.7	23.5	20.3	21.2
Total Males - Farm	11.0	8.9	10.4	21.1	17.9	17.5
Total Females - Non-farm	12.6	11.7	12.0	21.2	18.8	18.7
Total Females - Farm	10.4	9.3	8.5	13.9	11.3	9.3
Sao Paulo						
Total Males - Non-farm	11.9	9.9	11.7	14.3	12.1	13.3
Total Males - Farm	10.0	8.2	9.6	11.4	8.9	10.2
Total Females - Non farm	10.4	9.2	10.0	12.8	10.9	11.8
Total Females - Farm	3.6	4.1	-1.8	6.0	5.2	6.8
Pernambuco						
Total Males - Non-farm	15.1	13.1	14.7	18.2	14.7	16.9
Total Males - Farm	-	-	-	7.2	5.1	6.3
Total Females - Non-farm	15.4	14.3	14.7	17.0	15.9	15.7
Total Females - Farm	-	-	-	3.8	2.7	2.1

(1) See Tables 1 to 3.

longer than the latter to enable them to get similar rates of return. In the case of primary schooling, the differences between rates of return among groups are much bigger and no workable employment policy can be expected to bring full equalization.

2. Accounting for education wastage: In all the rates of return calculations carried out so far, it has been assumed that the number of years required to complete an education cycle was identical for all socio-economic groups and equal to the legal number of grades in the cycle. In Brazil, like in most other countries, it takes more than the legal number of years to complete a cycle because of the presence of repeaters and dropouts. Although the magnitude of education wastage varies greatly among countries, one can assume that, in a "typical" developing country, about 8 years of schooling is required to complete a 6-grade primary education cycle. As far as the distribution of wastage among socio-economic groups is concerned, one may safely assume that low-income children repeat and dropout more than high-income children.

No systematic data on repeat and dropout rates by regions, levels of education and socio-economic characteristics is readily available in Brazil. In the absence of a firm empirical basis, a sensitivity analysis using the following assumptions about the actual number of years required to complete a cycle was carried out to account for education wastage.

- legal number of years plus one for the Male-Non-Farm category
- legal number of years plus two for the Males-Farm category
- legal number of years plus one for the Female-Non-Farm category
- legal number of years plus three for the Females-Farm category.

The social rates of return computed on the basis of the above assumptions are shown in Table 10. On the whole, the rates of return appear to be quite sensitive to assumptions about wastage. For instance, at the primary level, one additional year to complete the cycle will result in a one to two percentage point decrease in the rate of return. "Maximum" wastage - that is three more years than is legally necessary - may cause the rates of return to drop

by about one-third (Females - Farm in Brazil). At the secondary level, the impact of wastage on rates of return is less strong - one additional year will "cost" less than half a percentage point - except in some cases such as that of farming females in the state of Sao Paulo.

The above assumptions about education wastage widen the gap between the rates of return of the various socio-economic groups and are, therefore, bound to have an adverse effect on the resulting income distribution. These assumptions are far from being unrealistic, however, and point out the importance of educational policies firmly geared towards a reduction of wastage differentials among groups.

3. Altering the share of public subsidy in total education costs: Different cost recovery practices for the various socio-economic groups could conceivably alter the existing pattern of private rates of return and bring an equalization of these rates with a beneficial effect on the distribution of income.

At present, the share of public subsidy in total costs vary from 17% to 35% according to regions, levels of education and socio-economic characteristics.[1/] A sensitivity analysis assuming greater progressivity in cost recovery practices - that is lower cost recovery (equivalent to higher subsidization) for low-income groups than for high income groups - was carried out in order to test the impact of cost recovery practices on private rates of return and income distribution. To be sure, the following hypotheses concerning cost recovery were adopted:

Males - Non-Farm :	80% of total costs
Males - Farm :	60% of total costs
Females - Non-Farm:	70% of total costs
Females - Farm :	50% of total costs

1/ See statistical Annex, Tables VI-1 to VI-6.

The results are presented in Table 11 which shows that maintaining public subsidizationat the existing level for the better-off group and increasing it up to 50 % for the worse-off group leads to a significant decline in the differences between private rates of return. For the farming females categories, for instance, this can push up their private rate of return to lower secondary schooling by two to four percentage points, thus approaching or exceeding those of the males-non-farm categories. Significant gains in the private rates of return to primary schooling of the low-income categories are also recorded but are seldom sufficient to bridge the existing gap between the rates of return of the various categories.

From the policy point of view, it thus appears that changes in cost recovery practices could significantly contribute to equalizing private rates of return to education and thus have a positive effect on the distribution of income. As to the direction of change, there is little to gain by <u>increasing</u> cost recovery since the least subsidized groups (Males-Non-Farm) already pay for about 80% of their education costs. Changes can only be in the direction of a decrease in cost-recovery for low-income groups. A new policy concerning cost recovery would thus imply higher public outlays for education.

4. <u>Changing relative tax burdens</u>: Tax burdens vary from 9.6% of total yearly earnings for non-farm males in the rich state of Sao Paulo to 2% of earnings for farming females in the poor state of Pernambuco. Although relatively progressive, the total tax effort is rather low across the board. A sensitivity analysis aiming at increasing taxation rates and accentuating the progressive character of the tax system was carried out to test the impact of tax policies on the existing pattern of private rates of return.

Annual tax burdens by age, sex, level of schooling and socio-economic characteristics are shown in absolute values in Tables II-1 to II-9 of the

TABLE 11 Sensitivity Analyses on Private Rates of Return

Socio-Economic Groups	Private Rates of Return to Lower Secondary Schooling			Private Rates of Return to Primary Schooling		
		Adjusted for:			Adjusted for:	
	Non Adjusted (1)	Changes in Cost Recovery	Changes in Tax Burdens	Non Adjusted (1)	Changes in Cost Recovery	Changes in Tax Burdens
Brazil						
Total Males - Non-farm	13.9	13.7	13.3	24.7	25.0	23.5
Total Males - Farm	12.5	13.2	12.5	24.1	26.8	24.0
Total Females - Non-farm	14.1	14.1	13.9	22.7	24.6	22.1
Total Females - Farm	13.4	15.3	13.3	16.8	22.2	16.8
Sao Paulo						
Total Males - Non-farm	12.7	12.5	12.2	15.1	15.1	14.3
Total Males - Farm	11.0	11.8	11.0	12.8	13.7	12.8
Total Females - Non-farm	11.6	11.7	11.4	13.8	14.5	13.4
Total Females - Farm	7.1	10.5	7.1	9.7	11.1	9.7
Pernambuco						
Total Males - Non-farm	15.7	15.9	15.2	19.0	19.3	18.4
Total Males - Farm	-	-	-	8.0	8.9	8.0
Total Females - Non-farm	17.2	17.3	16.9	19.3	19.3	18.9
Total Females - Farm	-	-	-	4.7	6.4	4.7

(1) Tables 4 to 6.

Statistical Annex. These tax streams were mutliplied by the following coefficients:

Males - Non-farm	:	2.0
Males - Farm	:	1.2
Females - Non-Farm	:	1.5
Females - Farm	:	1.0

The private rates of return computed on the basis of these new tax streams are shown in Table 9. In spite of their magnitude, these changes in tax burdens have, on the whole, little impact on the existing pattern of rates of return most of which vary by less than half-a-percentage point. From the policy viewpoint, an additional tax on lifetime earnings does not appear to be a very effective tool to alter the existing pattern of private rates of return and the resulting income distribution.

VI. Conclusions

The main conclusions emerging from this paper can be summarized as follows:

(i) High income, well educated groups enjoy better educational opoortunities for their children than low-income groups. Furthermore, the children of the former groups may expect a rate of return to their investment which is usually higher than - or at least equal to - that expected by their counterparts in the latter categories. As a result, education investment as such cannot significantly reduce existing income inequality. These findings appear equally true for the three geographical areas under consideration. It is important to note, however, that, in underdeveloped Pernambuco, the size of education investment is smaller but the rate of return to this investment is higher than in the more advance state of Sao

Paulo. Thus, assuming that differences in rates of return will hold over time, a policy of improved access to education in poor states may contribute to bridge the income gap between poor and rich states.

(ii) Education subsidies and taxes on lifetime earnings are unequally distributed among socio-economic groups. On the whole, they favor low-income educated individuals vis-a-vis high-income educated individuals but the effectiveness of this policy on income inequality is somewhat offset by the unequal distribution of educational opportunities among groups. As a result, the impact of government's financing and taxing policies on incomes - as assessed by the per capita subsidy accruing to each group - is a mixed one.

A variety of policy alternatives aiming at redirecting government intervention in education more clearly towards a reduction of income inequality has emerged from the analysis. First, the whole issue of access to education - that is, ensuring a more equitable distribution of educational opportunities among groups - remains as important as ever. Quite apart from what individuals do or might do with their education once in the labor force - as assessed by the rate of return they will get on their investment - the need to distribute basic educational opportunities more broadly is a first, necessary step towards income redistribution between as well as within socio-economic groups. The government of Brazil is presently taking steps to actually provide 8-9 years of subsidized education to all the relevant age-groups by extending the existing coverage of the education system to remote areas of the country. The enrollment ratios shown in Tables 1 to 3 give an idea of the magnitude of the task to be accomplished. From the purely distributional viewpoint, a poor state like Pernambuco is clearly more immediately eligible than the state of Sao Paulo for implementing the policy. But from the efficiency viewpoint also, the high rates of return for primary and

lower secondary schooling found in Pernambuco also imply that it would make sense to start implementing the policy in north-eastern states.

Second, policies aiming at equalizing rates of return among groups as part of a strategy of reduction of income inequality were tested in Section V of the study. It was found that equalizing employment opportunities significantly contributes to decreasing differences in rates of return to education. At present, high-income groups tend to enjoy a longer working week than low-income groups and this contributes to explaining their higher life-time earnings and rates of return. A more active employment policy aiming at longer working weeks for the disadvantaged groups than for the relatively well-off groups would be a significant step towards the equalization of rates of return among groups.

The rates of return have also proved to be very sensitive to education wastage. Improving the internal efficiency of the education system for low-income groups - that is to say, reducing the number of years actually necessary to complete a cycle through cuts in repeat and drop out rates - would tend to reduce the gaps between the rates of return of the various groups. This policy could be effectively harnessed to the proposals made earlier for improving access to basic education for low-income groups.

Increasing progressivity in cost recovery practices - that is to say, subsidizing the education of low-income groups to a greater extent than that of high income groups - could lead to significant gains in the rates of return of low income groups and thus have a positive effect on the distribution of income. This policy would, however, imply additional, and possibly substantial, public outlays for education. Other things being equal, the fiscal burden - now hovering around a relatively low 10-12% of GDP - would increase accordingly.

Changes in the tax burdens of educated individuals - for instance, in the form of an additional "education" tax on lifetime earnings - would have little impact on the existing pattern of rates of return. From the distributional view-

point, this often-mentioned policy proposal would not be a very effective course of action.

APPENDIX: A Note on Rates of Return Calculations

In the present study, social and private rates of return to education are defined according to conventional human capital theory, namely:

(i) social rates of return are derived from a comparison of pre-tax earnings differentials and the total costs of education including both public outlays and private costs;

(ii) private rates of return are derived from a comparison of post-tax earnings differentials and the costs of education borne by the individual.

All the rates shown in this study are internal rates of return, i.e., rates derived from equalizing the costs and benefits streams. It is important to note that the rates of return computed in the present study are not considered as tools to allocate resources but as proxies to measure and compare the overall amounts of subsidization received by various socio-economic groups because of their investment in education. In other words, no attempt is made here to compare education investment with other investments or various types of education investments among themselves on the basis of these rates. On the contrary, the bulk of the analysis focus on the differences between rates of return to the same level of education among various socio-economic groups.

This emphasis has a number of consequences concerning the traditional objections raised against the use of rates of return in educational planning. First, the most central objection, namely, the fact that earnings differentials may not measure adequately the relative marginal productivities of educated labor, is irrelevant to the context of the present study.

Second, the rates of return computed in the present study suffer from the same simplifying assumptions as in other studies, namely, (i) they are computed on the basis of observed earnings differentials between levels of education, thus excluding non-pecuniary and non-economic returns to education; (ii) they measure only the direct benefits of education to individuals, thus ignoring the external and/or "spillover" benefits usually associated with education; and (iii) they are "average" rates based on cross-section data which reflect present demand and supply conditions rather than "marginal" rates reflecting expected changes in real earning patterns; as such the value of these rates is descriptive rather than predictive. Here again, because the rates of return are used for comparison purposes across income groups rather than for allocative purposes, these three simplifying assumptions boil down to a presumption of equality (as compared to a presumption of zero) of external returns, non-economic benefits and differences between average and marginal rates across socio-economic groups.

Third, the usual recommendation to adjust earnings differentials downward to reflect factors other than education usually associated with these differentials[1/] has been deliberately ignored in the present study for a variety of reasons. First, whenever this adjustment is made in the literature, it is based on rather crude earning functions assuming additive effects of the various explanatory factors on education and there is no agreement about the magnitude of this adjustment - usually called the α coefficient and, therefore, the true economic value of education. Second, there is little point in making such an adjustment

1/ Such as ability, sex, family and social background, occupation and region of work.

in the present study because rates of return are to be compared among socio-economic groups unless, of course, it would have been possible to justify a different adjustment for each of the population groups under consideration. Such an analysis would have been beyond the scope of this study. Third, the emphasis on sub-populations defined by such factors as sex, economic background, region of work, past residence and (farm/non-farm) occupation is precisely designed to control for the non-education factors that affect incomes.

In this attempt to "homegenize" population groups with a view at apprehending the "pure" earnings differentials - i.e. those due to education only - the ability factor could not be controlled except for its effect on other controlled factors such as propensity to migrate. This is not considered to be a serious problem insofar as the study deals with basic, compulsory education only, i.e. the kind of education that is, supposedly, within everyone's reach regardless of ability. If an ability bias subsists in the results, it will not affect systematically the more privileged groups as in other studies of this kind because the propensity to seek further education is probably stronger in these groups than in other, under privileged groups.

Other Adjustments

A variety of other adjustments have been made on either the costs or benefits streams. When no reasonable adjustment could be made for lack of empirical evidence, the results were submitted to sensitivity analyses.

(i) Adjustment for growth in incomes

One of the problems of using cross-section data on earnings as a measure of benefits is that they do not reflect the fact that future incomes are likely to rise as a result of economic growth, so that lifetime incomes will be higher than those calculated from cross-section data.

This adjustment is important in a study aiming at comparing rates of return among socio-economic groups because it will affect earning streams of the various groups differentially as a result of the differences in the absolute size of incomes based on cross-section data. It was assumed in this study that all earnings will rise by 2% a year as a result of economic growth.

(ii) Sensitivity analyses to account for the employment factor

The employment situation - as assessed by the number of hours worked per week and the duration of job search - of the various groups is shown in the Statistical Annex (Tables III-1 to III-9 and Tables VII-1 to VII-3). Significant difference among groups emerge only for the main categories. The effects of these differences on the results of the analysis are explained in Section V of the paper.

(iii) Sensitivity analyses to account for wastage.

Education costs statistics are given in Tables VI-1 to VI-6 of the Statistical Annex. These data, which refer to the year 1970 - also considered as the medium year of the educational levels under consideration, are considered as adequate proxies for the average costs per student/year incurred to complete each level. The cost streams on which the rates of return computed in Sections II, III & IV are based, refer to the legal number of years required to complete a cycle. In Section V, various hypotheses concerning the actual number of years of schooling required to complete a cycle for each socio-economic groups are adopted and their impact on rates of return is analyzed.

STATISTICAL ANNEX

The data used in this study have been drawn from three main statistical sources: the 1972 household survey, the 1970 population census both carried out by the Brazilian Statistical Office in Rio (Fundacao IBGE) and Professor Sahota's study on "Taxes, Education and Income Distribution in Brazil" (Vanderbilt University, mimeo). Every effort has been made to ensure complementarity between these three sources of data.

The household survey is the most reliable statistical source for earnings data. It is carried out periodically by a group specializing in household surveys at the Fundacao IBGE. The earnings data used in this study were raised during the fourth trimester of 1972 for the seven regions of the federation. Close to 80,000 households were interviewed yielding statistics of monthly earnings separately for people involved in agricultural and non-agricultural occupations. The 1972 survey is also the only statistical source recording the employment situation of active persons in Brazil on a recurrent basis. In this survey all persons who were not working during the week of reference but had been actively looking for work over the past two months were considered as active.

The 1970 population census is an indispensable source of data for the kind of disaggregate analysis carried out in the present study. Only the population census has a sample big enough (25% of a total of 20 million questionnaires) to yield a sufficient number of observations in each cell of tables cross-classifying large numbers of variables such as income, education, sex, age and socio-economic characteristics. It is not possible, however, to rely on census statistics as far as earnings and

and employment data are concerned. In both cases the statistics drawn from the household survey are of a much better quanlity than those yielded by the Census.

In order to raise adequate tax data for the present study, a special research on the incidence of taxation in Brazil was commissioned by the author to Professor Sahota of Vanderbilt University. The purpose of such a study was to measure the tax burden distribution on the earnings of persons with different levels of education. The study included two steps: in the first step the tax burden distribution by income classes is calculated and, in the second step, the resulting distribution is translated in terms of education classes and all other characteristics.

1. Earnings Data (Tables I-1 to I-9)

The earnings statistics used in this study are mainly drawn from the 1972 household survey carried out by IBGE. The survey allowed for the following breakdown:

- three educational levels; lower secondary schooling, primary schooling and no schooling;
- 13 five-year age groups from 10 to over 70 years of age;
- four groups of population, namely, non-farm males, farm males, non-farm females and farm females.

These age earning profiles, subsequently considered as proxies for lifetime earning profiles, were further disaggregated with the help of Census data: see Adjustment (ii) below. Within the non-farm male category three additional sub-groups were worked out - non-farm male migrants from urban areas, non-farm male migrants from rural

areas, and non-farm males with a low socio-economic background - the latter one including all persons having a head of household earning less than 200 Cruzeiros per month. Within the farm males category two sub-groups were defined - farm male migrants from rural areas and farm males with a low socio-economic background (using the same definition as above).

Similar life-time earning profiles were computed for the same sub-groups under the non-farm and farm female categories. All in all, ten lifetime earning profiles were worked out for each of the three geographical areas (Brazil as a whole, State of Sao Paulo and the State of Pernambuco) for each of the three educational levels, already mentioned.

Adjustments

A number of adjustments were made to reconcile the data drawn from the 1972 household survey and the data drawn from the 1970 population ensus.

(i) Definition of the farm, non-farm categories:
The household survey uses such categories as "persons engaged in non-agricultural occupations" and "persons engaged in agricultural occupations" while the Census uses the traditional urban/rural breakdown. For the purpose of the present study the "urban" category was equated to the "persons engaged in non-agricultural occupations" category. The same approximation was used for "rural" and "persons engaged in agricultural occupations" categories.

(ii) The age earning profiles of the sub-groups for 1972 were computed in the following way: the income ratios of each sub-group such as "non-farm male migrants from urban areas" to that of the "mother" category such as "non-farm males" was computed for each age/education cell from the Census data and applied to the corresponding absolute figures for the "mother" category drawn from the 1972 household survey. The implication is that the relative income positions of the socio-economic groups have not changed between 1970 and 1972 and that the errors affecting earnings data in the Census - essentially under-reporting and no reporting - are similar for all socio-ecomomic groups. No attempt has been made to reconcile the age/education/earnings data with national accounts data.

(ii) The age-group distribution was reduced from 13 categories to 9, covering 15 to 50 years of age. The 10-14 age group was removed from the analysis because of the many uncertainties affecting earning statistics for that age: part-time or seasonal work, reporting of earnings by other family members and the like.

(iii) The age groups beyond 60 were also dropped partly because the returns to investment in education cease to accrue at what is normally considered the end of the active life. Admittedly, full-time but, above all, part-time activity may continue beyond the age of

sixty. This adjustment is, however, unlikely to have important consequences on the values of rates of return since earnings at that age are heavily discounted. Furthermore, the extremely young age of the Brazilian labor force underlines the importance of younger adult earnings.

2. Tax Burdens (Tables II-1 to II-9)

The tax burden statistics refer to all the main federal states and local taxes prevailing in Brazil in 1970. Special care was taken to assess the incidence of the four major taxes that account for over 80% of total tax revenue, namely, (a) personal income tax, (b) corporation income tax, (c) value added tax on sales and (d) a valued added tax on industrial products. In general, indirect taxes are assumed to be borne by consumers and direct taxes by earners of income. The main basis for the estimation of the incidence of indirect taxes are expenditure patterns drawn from surveys of household consumption. The incidence of the personal income tax is based on actual income tax collection data gathered by the Ministry of Finance.

The statistics on tax burdens are shown in Tables II-1 to II-9 are presented in absolute values on an annual basis. They are based on the monthly earnings statistics shown in Tables I-1 to I-9 which were converted on an annual basis, adjusted for potential increases in real incomes in the future by a growth factor of 2% per annum and multiplied by the tax rates yielded by the Sahota study.

In order to arrive at these tax rates a number of simplifying assumptions were made: first, tax evasion was disregarded and all the computations about tax burdens were made on the basis of absolute data

concerning tax collection. Second, the tax burdens were first computed on the basis of family incomes as yielded by the 1970 census classification. These tax burdens had to be further translated into tax burdens on personal incomes. This operation was carried out using an identical ratio of families to economically active persons in each bracket and attributing equal incomes to all earning members of a family in the given bracket. The effect of this conversion is to reduce the true differentials of tax burdens. Third, the tax rates computed for the year 1970 in the Sahota study were multiplied by the corresponding earnings statistics of 1972 shown in Tables I-1 to I-9 in order to arrive at tax burdens in absolute figures for 1972. It is thus assumed that tax rates have not changed significantly between 1970 and 1972.

On the whole, statistics on tax burdens by age/educational level and socio-economic characteristics should be considered with caution. On one hand, it is likely that they may suffer from a relatively wide margine of errors but, on the other hand, errors may have pretty much the same size and directions for all socio-economic groups. As a result, they should not affect the results of an analysis aiming at comparing tax burdens among socio-economic groups.

For further details on tax burdens, readers are referred to the work of Gian S. Sahota on "Taxes, Education and Income Distribution in Brazil", Vanderbilt University, mimeo.

3. Employment Statistics (Tables III-1 to III-9)

The employment statistics by age and education used in this study are drawn from the 1972 household survey for the four main categories - namely, males non-farm, males farm, females non-farm,

females farm. They express the average duration of employment of the persons in these categories in hours worked per week. These statistics are weighed averages using the mid-point in each of the four employment classes and the number of people in the corresponding employment classes.

The employment situation in the sub-categories was computed by combining Census information with data from the household survey in the same way as for earnings data.

4. Levels of Educational Attainment (Tables IV-1 to IV-3)

The levels of educational attainment of the various socio-economic groups under consideration are expressed by the number of years of schooling as declared in the population census. The data are pretty straightforward and no special adjustment was necessary.

5. Enrollment Ratios (Tables V-1 to V-6)

Enrollment statistics by age - between five to 35 and over years of age - were collected from the population census. Enrollment ratios were computed by dividing enrollment numbers by age by the corresponding population. No attempt was made to reconcile the enrollment data drawn from the population census with the statistics of the Ministry of Education. In 1970, enrollments according to the census were about 3% higher than enrollments according to the Ministry of Education for children between six and fourteen years of age. This difference is much smaller than the variation in enrollments recorded by the Ministry of Education between the beginning and the end of the academic year due to dropouts during this period.

6. Education Costs (Tables VI-1 to VI-6)

Public and private outlays per student-year for lower-secondary and primary education are presented in Tables VI-1 to VI-6.

Table I-1

BRAZIL: Monthly Earnings of Persons with Lower Secondary Schooling by Age, Sex and Socio-Economic Characteristics

Cruzeiros 1972

Socio-Economic Characteristics \ Age	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59
Total Males - Non-farm	252	567	968	1,144	1,340	1,673	1,879	1,980	1,976
Migrants from urban areas	302	642	1,046	1,222	1,422	1,752	1,965	2,065	2,043
Migrants from rural areas	326	531	855	1,025	1,178	1,422	1,588	1,727	1,569
Males with a low socio-economic background	295	425	605	661	718	867	836	917	830
Total Males - Farm	172	227	405	651	761	1,169	1,482	815	701
Migrants from rural areas	177	188	377	680	736	890	1,522	783	727
Males with a low socio-economic background	134	134	208	269	275	774	369	108	136
Total Females - Non-farm	210	359	478	673	794	779	846	853	957
Migrants from urban areas	272	382	485	682	781	772	818	817	875
Migrants from rural areas	272	382	513	646	896	619	685	547	556
Females with a low socio-economic background	199	330	391	526	593	548	577	537	579
Total Females - Farm	158	327	160	344	394	191	147	-	-
Migrants from rural areas	192	399	180	267	401	143	50	-	-
Females with a low socio-economic background	172	332	190	390	401	184	172	-	-

Source: Unpublished tabulations drawn from the 1972 Household Survey and the 1970 Population Census (IBGE).

Table I-2

BRAZIL: Monthly Earnings of Persons with Primary Schooling by Age, Sex and Socio-Economic Characteristics

Cruzeiros — 1972

Socio-Economic Characteristics \ Age	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59
Total Males - Non-farm	219	387	522	627	713	795	855	810	828
Migrants from urban areas	274	442	583	692	781	867	940	878	903
Migrants from rural areas	277	398	525	616	713	793	804	757	758
Males with a low socio-economic background	215	310	367	386	394	463	426	372	408
Total Males - Farm	150	189	310	330	377	432	452	606	566
Migrants from rural areas	176	200	321	344	373	441	463	658	574
Males with a low socio-economic background	155	139	174	165	169	179	188	170	219
Total Females - Non-farm	151	238	241	248	282	314	346	330	366
Migrants from urban areas	193	271	274	278	312	347	379	344	387
Migrants from rural areas	203	280	260	244	261	281	309	248	242
Females with a low socio-economic background	156	219	199	184	192	212	216	199	206
Total Females - Farm	112	121	114	96	112	157	157	179	180
Migrants from rural areas	140	133	109	92	100	141	94	149	134
Females with a low socio-economic background	112	115	114	100	104	141	105	107	70

Source: Unpublished tabulations drawn from the 1972 Household Survey and the 1970 Population Census (IBGE).

Table I-3

BRAZIL: Monthly Earnings of Persons with No Schooling by Age, Sex and Socio-Economic Characteristics

Cruzeiros 1972

Socio-Economic Characteristics \ Age	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59
Total Males - Non-farm	132	229	254	310	334	365	373	487	477
Migrants from urban areas	174	293	321	386	413	451	462	601	591
Migrants from rural areas	180	269	275	322	337	370	373	477	448
Males with a low socio-economic background	121	178	172	185	180	189	185	223	215
Total Males - Farm	94	125	141	161	175	228	238	206	202
Migrants from rural areas	114	150	165	187	204	269	279	244	235
Males with a low socio-economic background	87	96	95	104	106	127	126	101	92
Total Females - Non-farm	74	95	108	117	123	129	125	138	138
Migrants from urban areas	118	140	144	153	154	162	164	171	166
Migrants from rural areas	93	103	108	107	118	124	115	116	116
Females with a low socio-economic background	44	50	51	56	62	62	58	55	50
Total Females - Farm	69	66	75	78	90	88	100	78	86
Migrants from rural areas	86	53	60	65	64	77	89	70	70
Females with a low socio-economic background	69	53	60	39	51	33	33	31	23

Source: Unpublished tabulations drawn from the 1972 Household Survey and the 1970 Population Census (IBGE).

Table I-4

SAO PAULO: Monthly Earnings of Persons with Lower Secondary Schooling by Age, Sex and Socio-Economic Characteristics

Cruzeiros 1972

Socio-Economic Characteristics \ Age	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59
Total Males - Non-farm	271	650	1,137	1,372	1,564	2,170	2,424	2,280	2,169
Migrants from urban areas	304	676	1,171	1,384	1,594	2,190	2,436	2,232	2,169
Migrants from rural areas	344	585	978	1,194	1,361	1,780	2,131	2,004	1,323
Males with a low socio-economic background	336	546	750	837	843	1,213	1,064	1,003	911
Total Males - Farm	197	280	506	613	714	2,263	2,854	483	450
Migrants from rural areas	169	261	526	698	763	1,989	2,708	570	405
Males with a low socio-economic background	124	230	268	275	278	609	485	67	-
Total Females - Non-farm	231	469	637	778	835	939	1,029	750	838
Migrants from urban areas	268	469	650	786	894	957	978	713	711
Migrants from rural areas	214	478	675	731	802	723	853	269	427
Females with a low socio-economic background	208	422	490	560	585	609	658	465	477
Total Females - Farm	410	263	220	237	237	-	-	-	-
Migrants from rural areas	291	226	257	86	79	-	-	-	-
Females with a low socio-economic background	319	213	103	137	-	-	-	-	-

Source: Unpublished tabulations drawn from the 1972 Household Survey and the 1970 Population Census (IBGE).

Table I-5

SAO PAULO: Monthly Earnings of Persons with Primary Schooling by Age, Sex and Socio-Economic Characteristics

Cruzeiros — 1972

Socio-Economic Characteristics \ Age	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59
Total Males - Non-farm	252	485	649	762	852	907	953	948	900
Migrants from urban areas	277	519	655	776	852	934	991	909	900
Migrants from rural areas	297	451	609	647	750	853	666	777	567
Males with a low socio-economic background	300	403	441	487	502	626	229	152	207
Total Males - Farm	218	245	319	422	408	473	749	1,088	458
Migrants from rural areas	231	210	258	426	432	340	538	3,046	446
Males with a low socio-economic background	231	178	210	200	240	113	224	-	-
Total Females - Non-farm	193	349	333	316	386	419	473	527	430
Migrants from urban areas	214	334	326	306	405	410	497	617	447
Migrants from rural areas	231	484	406	278	285	507	359	527	275
Females with a low socio-economic background	179	300	252	199	247	251	279	353	313
Total Females - Farm	169	202	244	159	204	431	53	305	305
Migrants from rural areas	211	72	171	52	59	176	159	-	-
Females with a low socio-economic background	182	68	93	52	248	262	159	-	-

Source: Unpublished tabulations drawn from the 1972 Household Survey and the 1970 Population Census (IBGE).

Table I-6

SAO PAULO: Monthly Earnings of Persons with No Schooling by Age, Sex and Socio-Economic Characteristics

Cruzeiros 1972

Socio-Economic Characteristics \ Age	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59
Total Males - Non-farm	204	348	397	440	468	558	578	599	575
Migrants from urban areas	226	379	444	488	529	624	650	677	656
Migrants from rural areas	240	351	377	405	416	502	516	533	472
Males with a low socio-economic background	190	285	278	264	256	290	302	276	236
Total Males - Farm	182	240	274	278	300	295	309	334	324
Migrants from rural areas	187	240	271	278	294	298	315	344	334
Males with a low socio-economic background	178	175	156	135	146	154	155	143	123
Total Females - Non-farm	143	200	206	217	201	204	204	229	212
Migrants from urban areas	168	238	243	254	231	235	248	268	242
Migrants from rural areas	149	180	179	186	169	177	156	164	156
Females with a low socio-economic background	116	130	127	125	124	120	104	109	79
Total Females - Farm	177	170	169	130	182	186	162	187	163
Migrants from rural areas	177	104	136	104	129	116	138	187	163
Females with a low socio-economic background	192	145	136	104	104	116	93	116	45

Source: Unpublished tabulations drawn from the 1972 Household Survey and the 1970 Population Census (IBGE).

Table I-7

PERNAMBUCO: Monthly Earnings of Persons with Lower Secondary Schooling by Age, Sex and Socio-Economic Characteristics

Cruzeiros 1972

Socio-Economic Characteristics \ Age	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59
Total Males - Non-farm	175	329	649	927	1,169	1,556	1,774	2,218	2,067
Migrants from urban areas	224	415	792	1,058	1,274	1,743	1,987	2,484	2,294
Migrants from rural areas	79	237	649	1,085	1,040	1,556	1,242	954	1,819
Males with a low socio-economic background	195	230	389	547	877	622	674	413	641
Total Males - Farm	-	-	-	-	-	-	-	-	-
Migrants from rural areas	-	-	-	-	-	-	-	-	-
Males with a low socio-economic background	-	-	-	-	-	-	-	-	-
Total Females - Non-farm	135	203	223	450	580	560	715	874	874
Migrants from urban areas	135	207	239	459	563	560	694	848	813
Migrants from rural areas	217	242	259	369	638	666	565	839	1,320
Females with a low socio-economic background	217	250	281	581	696	840	536	664	358
Total Females - Farm	-	-	-	-	-	-	-	-	-
Migrants from rural areas	-	-	-	-	-	-	-	-	-
Females with a low socio-economic background	-	-	-	-	-	-	-	-	-

Source: Unpublished tabulations drawn from the 1972 Household Survey and the 1970 Population Census (IBGE).

Table 1-8

PERNAMBUCO: Monthly Earnings of Persons with Primary Schooling by Age, Sex and Socio-Economic Characteristics

Cruzeiros 1972

Socio-Economic Characteristics \ Age	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59
Total Males - Non-farm	140	238	297	390	483	677	693	523	541
Migrants from urban areas	183	274	330	328	546	758	790	638	660
Migrants from rural areas	189	238	298	339	435	758	707	471	449
Males with a low socio-economic background	140	183	217	226	208	305	277	194	362
Total Males - Farm	99	104	126	174	180	127	223	205	230
Migrants from rural areas	117	105	145	146	221	91	381	154	143
Males with a low socio-economic background	108	82	98	115	148	61	392	-	-
Total Females - Non-farm	71	112	110	148	181	204	200	200	192
Migrants from urban areas	84	116	105	155	185	243	216	214	194
Migrants from rural areas	96	138	135	149	199	159	214	188	136
Females with a low socio-economic background	77	125	124	139	141	153	124	140	125
Total Females - Farm	77	65	46	60	70	115	115	65	77
Migrants from rural areas	77	57	37	41	60	62	78	150	30
Females with a low socio-economic background	77	61	50	65	65	84	92	27	44

Source: Unpublished tabulations drawn from the 1972 Household Survey and the 1970 Population Census (IBGE).

Table I-9

PERNAMBUCO: Monthly Earnings of Persons with No Schooling by Age, Sex and Socio-Economic Characteristics

Cruzeiros 1972

Socio-Economic Characteristics \ Age	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59
Total Males - Non-farm	110	178	212	235	247	257	255	273	265
Migrants from urban areas	124	208	248	266	299	296	306	333	294
Migrants from rural areas	145	190	212	221	248	234	245	243	236
Males with a low socio-economic background	96	135	140	150	124	105	107	123	114
Total Males - Farm	94	119	124	129	137	153	151	143	141
Migrants from rural areas	118	136	131	135	142	155	140	146	155
Males with a low socio-economic background	91	98	93	88	92	95	100	84	76
Total Females - Non-farm	55	70	84	62	70	83	83	94	94
Migrants from urban areas	74	92	103	84	82	87	95	98	114
Migrants from rural areas	67	74	97	62	70	91	73	88	78
Females with a low socio-economic background	28	32	32	31	30	35	29	32	36
Total Females - Farm	62	60	61	76	76	71	71	63	63
Migrants from rural areas	94	74	61	100	114	71	71	55	55
Females with a low socio-economic background	62	45	71	49	38	26	26	14	14

Source: Unpublished tabulations drawn from the 1972 Household Survey and the 1970 Population Census (IBGE).

Table II-I

BRAZIL: Annual Tax Burdens of Persons with Lower Secondary Schooling by Age, Sex and Socio-Economic Characteristics

Cruzeiros 1972

Socio-Economic Characteristics \ Age	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59
Total Males - Non-farm	289	684	1,342	1,751	2,264	3,333	4,134	4,809	5,299
Migrants from urban areas	346	775	1,450	1,870	2,402	3,490	4,323	5,016	5,478
Migrants from rural areas	374	641	1,186	1,569	1,990	2,652	3,271	4,194	3,940
Males with a low socio-economic background	339	528	806	972	1,166	1,617	1,722	2,086	2,004
Total Males - Farm	51	78	153	222	287	487	682	450	392
Migrants from rural areas	53	64	142	232	278	371	700	398	408
Males with a low socio-economic background	40	46	78	92	104	393	170	67	93
Total Females - Non-farm	241	429	630	1,010	1,315	1,425	1,726	1,864	2,310
Migrants from urban areas	312	457	640	1,023	1,294	1,426	1,669	1,840	2,112
Migrants from rural areas	312	457	676	941	1,484	1,132	1,384	1,220	1,370
Females with a low socio-economic background	229	394	531	798	992	982	1,142	1,210	1,440
Total Females - Farm	47	108	58	138	181	97	82	-	-
Migrants from rural areas	57	131	65	107	184	73	27	-	-
Females with a low socio-economic background	51	109	72	162	184	93	96	-	-

Source: "Taxes, Education and Income Distribution in Brazil", by Gian S. Sahota, Vanderbilt University (mimeo).

Table II-2

BRAZIL: Annual Tax Burdens of Persons with Primary Schooling by Age, Sex, and Socio-Economic Characteristics

Cruzeiros 1972

Socio-Economic Characteristics \ Age	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59
Total Males - Non-farm	252	481	696	923	1,157	1,426	1,761	1,842	2,080
Migrants from urban areas	314	550	777	1,018	1,268	1,617	1,936	1,997	2,268
Migrants from rural areas	318	495	700	906	1,157	1,421	1,592	1,654	1,830
Males with a low socio-economic background	246	382	504	585	659	830	843	837	985
Total Males - Farm	45	64	96	137	173	219	253	375	386
Migrants from rural areas	52	68	121	143	171	224	259	407	392
Males with a low socio-economic background	46	46	66	69	78	91	105	105	150
Total Females - Non-farm	174	302	337	384	480	592	720	758	874
Migrants from urban areas	222	343	384	430	532	653	788	790	982
Migrants from rural areas	233	355	364	378	445	529	643	570	614
Females with a low socio-economic background	179	278	279	284	328	399	449	457	522
Total Females - Farm	33	40	41	39	50	77	85	107	119
Migrants from rural areas	42	44	40	37	44	69	51	89	88
Females with a low socio-economic background	33	38	41	40	46	69	57	64	46

Source: "Taxes, Education and Income Distribution in Brazil", by Gian S. Sahota, Vanderbilt University (mimeo).

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Table II-3

BRAZIL: Annual Tax Burdens of Persons with No Schooling by Age, Sex and Socio-Economic Characteristics

Cruzeiros 1972

Socio-Economic Characteristics \ Age	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59
Total Males - Non-farm	152	273	345	466	553	668	761	1,086	1,175
Migrants from urban areas	200	361	441	585	691	833	942	1,354	1,470
Migrants from rural areas	207	321	374	483	559	683	761	1,064	1,103
Males with a low socio-economic background	139	226	227	270	289	335	385	460	545
Total Males - Farm	28	41	51	67	80	116	133	127	138
Migrants from rural areas	34	49	62	78	94	136	156	151	160
Males with a low socio-economic background	26	32	35	42	47	62	68	60	60
Total Females - Non-farm	85	121	151	181	210	243	260	317	349
Migrants from urban areas	135	178	202	236	263	305	341	393	421
Migrants from rural areas	107	131	151	165	202	234	239	266	294
Females with a low socio-economic background	51	63	72	86	106	116	121	126	127
Total Females - Farm	21	22	27	31	40	43	54	46	57
Migrants from rural areas	26	18	22	26	28	38	48	42	46
Females with a low socio-economic background	21	18	22	16	23	16	32	18	15

Source: "Taxes, Education and Income Distribution in Brazil", by Gian S. Sahota, Vanderbilt University (mimeo).

Table II-4

SAO PAULO: Annual Tax Burdens of Persons with Lower Secondary Schooling by Age, Sex and Socio-Economic Characteristics

Cruzeiros 1972

Socio-Economic Characteristics \ Age	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59
Total Males - Non-farm	371	927	1,775	2,365	2,898	4,441	5,478	5,688	5,975
Migrants from urban areas	417	964	1,828	2,324	2,954	4,482	5,505	5,569	5,975
Migrants from rural areas	471	834	1,527	2,058	2,589	3,643	4,816	5,000	3,741
Males with a low socio-economic background	460	779	1,182	1,443	1,604	2,549	2,468	2,568	2,576
Total Males - Farm	100	133	245	292	375	1,311	1,769	330	340
Migrants from rural areas	86	124	255	332	400	1,153	1,679	390	306
Males with a low socio-economic background	63	109	112	147	164	342	378	58	-
Total Females - Non-farm	329	692	1,037	1,399	1,656	2,177	2,634	1,938	2,390
Migrants from urban areas	382	692	1,059	1,413	1,774	2,218	2,504	2,015	2,218
Migrants from rural areas	448	705	1,100	1,314	1,591	1,584	2,184	766	1,291
Females with a low socio-economic background	297	658	772	973	1,122	1,291	1,540	1,315	1,489
Total Females - Farm	208	147	136	161	152	-	-	-	-
Migrants from rural areas	147	126	159	59	60	-	-	-	-
Females with a low socio-economic background	161	119	64	94	-	-	-	-	-

Source: "Taxes, Education and Income Distribution in Brazil", by Gian S. Sahota, Vanderbilt University (mimeo).

Table II-5

SAO PAULO: Annual Tax Burdens of Persons with Primary Schooling by Age, Sex and Socio-Economic Characteristics

Cruzeiros 1972

Socio-Economic Characteristics \ Age	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59
Total Males - Non-farm	345	691	1,023	1,324	1,634	1,922	2,230	2,449	2,567
Migrants from urban areas	379	741	1,032	1,349	1,634	1,962	2,299	2,328	2,567
Migrants from rural areas	407	704	959	1,124	1,439	1,808	1,558	2,008	1,617
Males with a low socio-economic background	410	628	695	847	963	1,327	536	430	612
Total Males - Farm	111	114	167	194	207	309	539	865	402
Migrants from rural areas	117	97	135	196	219	222	387	2,421	391
Males with a low socio-economic background	117	82	109	114	151	78	170	-	-
Total Females - Non-farm	275	548	578	606	817	979	1,220	1,502	1,352
Migrants from urban areas	304	525	566	587	857	958	1,282	1,757	1,406
Migrants from rural areas	329	761	704	533	602	1,184	926	1,502	864
Females with a low socio-economic background	255	472	437	382	522	587	720	1,005	984
Total Females - Farm	86	113	151	109	154	359	49	310	342
Migrants from rural areas	107	40	106	35	45	146	146	-	-
Females with a low socio-economic background	92	38	58	35	187	217	146	-	-

Source: "Taxes, Education and Income Distribution in Brazil", by Gian S. Sahota, Vanderbilt University (mimeo).

Table II-6

SAO PAULO: Annual Tax Burdens of Persons with No Schooling by Age, Sex and Socio-Economic Characteristics

Cruzeiros 1972

Socio-Economic Characteristics \ Age	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59
Total Males - Non-farm	290	496	625	759	891	1,173	1,341	1,534	1,626
Migrants from urban areas	323	541	700	841	1,007	1,311	1,508	1,734	1,855
Migrants from rural areas	342	501	593	704	791	1,054	1,197	1,365	1,347
Males with a low socio-economic background	271	444	438	458	491	609	731	755	696
Total Males - Farm	92	114	133	132	157	192	198	236	284
Migrants from rural areas	95	111	113	132	154	173	227	251	293
Males with a low socio-economic background	91	81	96	63	92	128	121	-	-
Total Females - Non-farm	204	315	357	415	409	458	506	612	641
Migrants from urban areas	239	374	422	486	470	528	615	758	714
Migrants from rural areas	212	272	299	356	357	398	387	438	490
Females with a low socio-economic background	165	196	212	231	246	269	258	299	249
Total Females - Farm	90	95	104	89	137	155	149	190	-
Migrants from rural areas	90	58	84	71	98	-	127	-	-
Females with a low socio-economic background	98	81	84	71	79	97	86	-	-

Source: "Taxes, Education and Income Distribution in Brazil", by Gian S. Sahota, Vanderbilt University (mimeo).

Table II-7

PERNAMBUCO: Annual Tax Burdens of Persons with Lower Secondary Schooling by Age, Sex and Socio-Economic Characteristics

Cruzeiros 1972

Socio-Economic Characteristics \ Age	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59
Total Males - Non-farm	174	357	769	1,282	1,783	2,621	3,300	4,554	4,686
Migrants from urban areas	222	445	991	1,462	1,943	2,936	3,775	5,211	5,313
Migrants from rural areas	78	254	769	1,499	1,587	2,621	2,310	1,853	4,125
Males with a low socio-economic background	194	246	466	715	1,337	991	1,186	812	1,375
Total Males - Farm	-	43	22	24	35	33	31	29	34
Migrants from rural areas	-	182	24	14	24	-	26	68	66
Males with a low socio-economic background	-	29	20	18	17	-	-	-	-
Total Females - Non-farm	134	222	243	589	845	902	1,273	1,718	1,897
Migrants from urban areas	134	227	261	552	748	892	1,235	1,666	1,319
Migrants from rural areas	216	266	383	493	847	1,061	994	1,631	2,832
Females with a low socio-economic background	216	275	306	699	1,004	1,354	943	1,187	788
Total Females - Farm	-	-	-	-	-	-	-	-	-
Migrants from rural areas	-	-	-	-	-	-	-	-	-
Females with a low socio-economic background	-	-	-	-	-	-	-	-	-

Source: "Taxes, Education and Income Distribution in Brazil", by Gian S. Sahota, Vanderbilt University (mimeo).

Table II-8

PERNAMBUCO: Annual Tax Burdens of Persons with Primary Schooling by Age, Sex and Socio-Economic Characteristics

Cruzeiros — 1972

Socio-Economic Characteristics \ Age	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59
Total Males - Non-farm	140	255	356	510	697	1,079	1,220	1,016	1,161
Migrants from urban areas	182	294	391	429	788	1,208	1,390	1,240	1,416
Migrants from rural areas	188	255	357	444	627	1,208	1,244	915	964
Males with a low socio-economic background	140	181	257	296	300	486	488	377	777
Total Males - Farm	23	27	37	47	53	46	39	91	112
Migrants from rural areas	27	27	43	48	72	36	168	61	63
Males with a low socio-economic background	25	21	29	38	53	24	172	-	-
Total Females - Non-farm	70	123	133	198	267	332	360	398	421
Migrants from urban areas	84	127	127	207	273	396	389	426	426
Migrants from rural areas	95	151	164	199	293	259	385	374	299
Females with a low socio-economic background	77	137	150	186	208	249	223	278	275
Total Females - Farm	18	17	13	19	24	44	48	30	39
Migrants from rural areas	18	14	11	13	21	24	33	70	15
Females with a low socio-economic background	18	16	14	20	22	32	39	13	22

Source: "Taxes, Education and Income Distribution in Brazil", by Gian S. Sahota, Vanderbilt University (mimeo).

Table II-9

PERNAMBUCO: Annual Tax Burdens of Persons with No Schooling by Age, Sex and Socio-Economic Characteristics

Cruzeiros 1972

Socio-Economic Characteristics \ Age	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59
Total Males - Non-farm	109	176	251	311	360	409	449	531	568
Migrants from urban areas	123	206	297	352	431	472	539	647	631
Migrants from rural areas	144	188	251	292	362	377	436	478	512
Males with a low socio-economic background	95	149	152	181	164	154	173	220	225
Total Males - Farm	22	30	35	42	50	61	66	70	76
Migrants from rural areas	27	35	39	44	51	62	62	71	83
Males with a low socio-economic background	21	25	26	28	32	36	42	39	39
Total Females - Non-farm	55	77	102	83	104	135	149	187	206
Migrants from urban areas	74	101	125	113	121	142	171	194	250
Migrants from rural areas	67	36	118	83	104	149	131	175	171
Females with a low socio-economic background	28	35	39	41	44	57	52	64	79
Total Females - Farm	14	15	17	24	26	27	30	29	32
Migrants from rural areas	22	19	17	31	39	27	30	25	28
Females with a low socio-economic background	14	12	20	15	13	10	11	7	7

Source: "Taxes, Education and Income Distribution in Brazil", by Gian S. Sahota, Vanderbilt University (mimeo).

Table III-I

BRAZIL: Employment Situation of Persons with Lower Secondary Schooling, by Age, Sex and Socio-Economic Characteristics

Number of Hours Worked Per Week — 1972

Socio-Economic Characteristics \ Age	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59
Total Males - Non-farm	44	45	46	46	46	46	46	45	45
Migrants from urban areas	44	45	47	46	46	46	46	45	45
Migrants from rural areas	44	46	47	46	47	46	47	45	46
Males with a low socio-economic background	44	44	45	44	44	43	44	43	44
Total Males - Farm	41	47	50	49	49	46	46	44	44
Migrants from rural areas	42	48	51	50	49	46	47	45	44
Males with a low socio-economic background	41	46	48	47	50	48	47	40	-
Total Females - Non-farm	43	42	38	38	38	37	37	37	37
Migrants from urban areas	43	43	39	38	39	38	38	38	37
Migrants from rural areas	44	42	38	37	38	36	38	39	35
Females with a low socio-economic background	43	41	38	37	38	37	37	37	37
Total Females - Farm	37	42	36	43	43	34	34	27	27
Migrants from rural areas	37	43	35	46	45	37	35	29	31
Females with a low socio-economic background	37	41	34	43	45	31	32	29	-

Source: Unpublished tabulations drawn from the Household Survey and the Population Census, IBGE.

Table III-2

BRAZIL: Employment Situation of Persons with Primary Schooling by Age and Socio-Economic Characteristics

Number of Hours Worked Per Week — 1972

Socio-Economic Characteristics \ Age	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59
Total Males - Non-farm	45	46	47	47	47	46	46	45	45
Migrants from urban areas	46	46	47	48	47	46	47	45	45
Migrants from rural areas	47	47	48	48	47	47	47	45	45
Males with a low socio-economic background	45	44	44	44	43	42	44	43	43
Total Males - Farm	46	47	47	47	47	47	47	46	46
Migrants from rural areas	46	46	47	47	47	47	47	46	46
Males with a low socio-economic background	45	46	46	46	45	46	46	45	44
Total Females - Non-farm	46	44	42	40	40	40	40	38	38
Migrants from urban areas	47	46	43	41	41	41	41	39	38
Migrants from rural areas	47	45	42	40	41	40	41	38	38
Females with a low socio-economic background	44	43	40	39	39	38	39	37	36
Total Females - Farm	42	40	40	40	40	40	40	41	41
Migrants from rural areas	42	41	40	40	41	41	41	41	42
Females with a low socio-economic background	42	40	40	40	39	40	38	40	40

Source: Unpublished tabulations drawn from the Household Survey and the Population Census, IBGE.

Table III-3

BRAZIL - Employment Situation of Persons with No Schooling, by Age, Sex and Socio-Economic Characteristics

Number of Hours Worked Per Week — 1972

Socio-Economic Characteristics \ Age	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59
Total Males - Non-farm	43	45	46	45	45	43	45	44	44
Migrants from urban areas	45	46	46	46	45	44	46	44	44
Migrants from rural areas	45	46	47	46	45	44	46	44	44
Males with a low socio-economic background	42	44	43	42	41	40	42	42	41
Total Males - Farm	45	45	45	46	46	46	46	45	45
Migrants from rural areas	46	46	46	47	47	47	47	46	46
Males with a low socio-economic background	45	45	45	45	46	45	45	45	45
Total Females - Non-farm	45	43	41	39	39	40	40	37	37
Migrants from urban areas	46	45	42	40	40	41	41	38	38
Migrants from rural areas	46	44	42	39	39	39	39	37	37
Females with a low socio-economic background	42	41	38	37	37	38	38	36	35
Total Females - Farm	39	37	37	38	38	33	38	38	38
Migrants from rural areas	36	38	38	39	35	34	39	39	39
Females with a low socio-economic background	34	37	37	38	33	32	37	37	37

Source: Unpublished tabulations drawn from the Household Survey and the Population Census, IBGE.

Table III-4

SAO PAULO: Employment Situation of Persons with Lower Secondary Schooling by Age, Sex and Socio-Economic Characteristics

Number of Hours Worked Per Week — 1972

Socio-Economic Characteristics \ Age	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59
Total Males - Non-farm	44	45	46	47	47	47	47	45	45
Migrants from urban areas	44	45	46	48	47	47	46	45	45
Migrants from rural areas	44	45	47	48	47	46	48	45	46
Males with a low socio-economic background	44	45	45	45	46	44	46	41	46
Total Males - Farm	45	45	52	41	41	48	48	48	48
Migrants from rural areas	-	-	-	-	-	-	-	-	-
Males with a low socio-economic background	-	-	-	-	-	-	-	-	-
Total Females - Non-farm	43	45	40	40	40	40	40	37	37
Migrants from urban areas	43	46	40	40	41	40	40	37	38
Migrants from rural areas	45	47	42	38	38	40	40	39	36
Females with a low socio-economic background	45	46	42	41	41	40	40	38	39
Total Females - Farm	42	36	45	39	39	27	27	-	-
Migrants from rural areas	-	-	-	-	-	-	-	-	-
Females with a low socio-economic background	-	-	-	-	-	-	-	-	-

Source: Unpublished tabulations drawn from the Household Survey and the Population Census, IBGE.

Table III-5

SAO PAULO: Employment Situation of Persons with Primary Schooling by Age, Sex and Socio-Economic Characteristics

Number of Hours Worked Per Week — 1972

Socio-Economic Characteristics \ Age	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59
Total Males - Non-farm	45	46	47	47	47	46	46	45	45
Migrants from urban areas	45	46	47	47	47	46	46	45	45
Migrants from rural areas	45	47	48	48	48	47	46	45	46
Males with a low socio-economic background	45	45	46	46	44	46	45	45	46
Total Males - Farm	48	49	48	48	48	48	48	48	48
Migrants from rural areas	-	-	-	-	-	-	-	-	-
Males with a low socio-economic background	-	-	-	-	-	-	-	-	-
Total Females - Non-farm	46	45	43	41	41	42	42	40	40
Migrants from urban areas	46	45	44	41	41	43	41	40	42
Migrants from rural areas	47	45	43	41	42	44	45	41	41
Females with a low socio-economic background	46	45	44	42	41	43	44	38	36
Total Females - Farm	44	45	45	38	38	45	45	41	41
Migrants from rural areas	-	-	-	-	-	-	-	-	-
Females with a low socio-economic background	-	-	-	-	-	-	-	-	-

Source: Unpublished tabulations drawn from the Household Survey and the Population Census, IBGE.

Table III-6

SAO PAULO: Employment Situation of Persons with No Schooling by Age, Sex and Socio-Economic Characteristics

Number of Hours Worked Per Week — 1972

Socio-Economic Characteristics \ Age	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59
Total Males - Non-farm	46	47	48	47	47	46	46	44	44
Migrants from urban areas	46	47	48	47	47	46	46	44	44
Migrants from rural areas	47	48	48	47	48	46	46	43	44
Males with a low socio-economic background	45	46	46	45	44	43	43	42	41
Total Males - Farm	50	47	48	47	47	46	46	46	46
Migrants from rural areas	50	46	48	47	47	46	46	46	46
Males with a low socio-economic background	50	47	48	46	46	45	45	45	45
Total Females - Non-farm	48	43	42	43	43	40	40	36	36
Migrants from urban areas	48	43	43	44	43	40	41	37	36
Migrants from rural areas	48	43	43	44	42	39	40	35	35
Females with a low socio-economic background	46	41	41	42	42	39	39	35	34
Total Females - Farm	43	41	43	41	41	39	39	34	39
Migrants from rural areas	43	41	43	41	41	39	39	35	39
Females with a low socio-economic background	43	41	43	41	41	39	39	34	39

Source: Unpublished tabulations drawn from the Household Survey and the Population Census, IBGE.

Table III-7

PERNAMBUCO: Employment Situation of Persons with Lower Secondary Schooling by Age, Sex and Socio-Economic Characteristics

Number of Hours Worked Per Week — 1972

Socio-Economic Characteristics \ Age	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59
Total Males - Non-farm	42	45	46	46	46	48	48	45	45
Migrants from urban areas	43	46	46	47	47	48	48	46	44
Migrants from rural areas	31	42	46	48	43	48	48	44	45
Males with a low socio-economic background	40	44	44	45	38	41	48	48	50
Total Males - Farm	34	48	45	45	45	-	-	27	27
Migrants from rural areas	-	-	-	-	-	-	-	-	-
Males with a low socio-economic background	-	-	-	-	-	-	-	-	-
Total Females - Non-farm	43	39	35	41	41	36	36	52	52
Migrants from urban areas	42	40	35	41	41	35	37	48	55
Migrants from rural areas	39	42	36	39	36	35	33	66	48
Females with a low socio-economic background	41	40	35	42	41	36	36	55	57
Total Females - Farm	27	-	-	-	-	-	-	-	-
Migrants from rural areas	-	-	-	-	-	-	-	-	-
Females with a low socio-economic background	-	-	-	-	-	-	-	-	-

Source: Unpublished tabulations drawn from the Household Survey and the Population Census, IBGE.

Table III-8

PERNAMBUCO: Employment Situation of Persons with Primary Schooling by Age, Sex, and Socio-Economic Characteristics

Number of Hours Worked Per Week — 1972

Socio-Economic Characteristics \ Age	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59
Total Males - Non-farm	42	48	46	47	47	48	48	42	42
Migrants from urban areas	43	50	46	47	49	47	47	41	42
Migrants from rural areas	43	47	50	50	44	45	53	43	43
Males with a low socio-economic background	42	46	45	44	33	53	-	26	-
Total Males - Farm	43	43	44	47	47	45	45	41	41
Migrants from rural areas	-	-	-	-	-	-	-	-	-
Males with a low socio-economic background	-	-	-	-	-	-	-	-	-
Total Females - Non-farm	44	43	38	37	37	38	38	36	36
Migrants from urban areas	46	45	33	42	37	41	42	41	37
Migrants from rural areas	52	43	39	43	41	21	43	-	48
Females with a low socio-economic background	43	43	36	37	36	36	38	22	37
Total Females - Farm	38	36	30	39	39	38	38	27	27
Migrants from rural areas	-	-	-	-	-	-	-	-	-
Females with a low socio-economic background	-	-	-	-	-	-	-	-	-

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Source: Unpublished tabulations drawn from the Household Survey and the Population Census, IBGE.

Table III-9

PERNAMBUCO: Employment Situation of Persons with No Schooling by Age, Sex and Socio-Economic Characteristics

Number of Hours Worked Per Week — 1972

Socio-Economic Characteristics \ Age	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59
Total Males - Non-farm	41	42	44	47	47	46	46	46	46
Migrants from urban areas	43	44	44	47	48	47	46	47	45
Migrants from rural areas	45	43	43	47	48	46	47	46	45
Males with a low socio-economic background	40	40	40	42	42	43	42	41	41
Total Males - Farm	44	43	44	46	46	43	43	44	44
Migrants from rural areas	43	42	44	46	46	43	43	44	44
Males with a low socio-economic background	44	43	44	45	45	42	42	44	44
Total Females - Non-farm	46	42	39	39	39	42	42	38	38
Migrants from urban areas	47	44	41	40	40	44	44	39	39
Migrants from rural areas	48	42	40	40	39	41	41	39	37
Females with a low socio-economic background	41	39	37	37	37	39	41	39	37
Total Females - Farm	36	38	33	35	35	36	36	35	35
Migrants from rural areas	36	38	33	35	35	36	36	35	35
Females with a low socio-economic background	36	38	33	35	35	36	35	35	35

Source: Unpublished tabulations drawn from the Household Survey and the Population Census, IBGE.

TABLE IV - 1

BRAZIL: Average Number of Years of Schooling of Total Population
By Age, Sex and Socio-Economic Characteristics

1970

Socio-Economic Characteristics \ Age	5 - 9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70 + Cyrs	Total
Total Males - Non-farm	0.5	3.0	4.9	5.4	5.0	4.6	4.3	4.1	3.9	3.6	3.5	3.2	3.1	2.8	3.9
Migrants from urban areas	0.5	3.2	5.3	5.8	5.6	5.2	5.0	4.7	4.6	4.3	4.3	4.1	3.9	3.6	4.5
Migrants from rural areas	0.3	2.3	3.6	3.4	3.1	2.8	2.5	2.3	2.1	1.9	1.8	1.7	1.6	1.4	2.4
Males with a low socio-economic background	0.3	2.2	3.6	4.0	4.0	3.5	3.2	2.9	2.7	2.3	2.2	2.0	1.4	1.3	2.4
Total Males - Farm	0.2	1.2	1.7	1.5	1.3	1.2	1.1	1.0	1.0	0.9	0.9	0.8	0.8	0.6	1.0
Migrants from rural areas	0.2	1.3	1.7	1.5	1.3	1.2	1.1	1.0	0.9	0.9	0.8	0.8	0.8	0.7	1.1
Males with a low socio-economic background	0.1	1.0	1.4	1.3	1.2	1.0	0.8	0.7	0.6	0.6	0.5	0.5	0.5	0.5	0.8
Total Females - Non-farm	0.5	3.1	4.8	5.0	4.4	3.9	3.4	3.3	3.0	2.7	2.6	2.3	2.2	1.9	3.3
Migrants from urban areas	0.6	3.3	4.9	5.2	4.8	4.3	4.0	3.8	3.5	3.2	3.1	2.8	2.7	2.4	3.8
Migrants from rural areas	0.4	2.4	3.4	3.1	2.5	2.2	1.8	1.8	1.4	1.2	1.1	1.0	0.9	0.8	2.0
Females with a low socio-economic background	0.3	2.4	3.5	3.7	2.8	2.3	1.9	1.7	1.6	1.4	1.3	1.2	1.2	1.0	2.2
Total Females - Farm	0.2	1.3	1.8	1.5	1.2	1.1	0.9	0.8	0.7	0.6	0.5	0.4	0.4	0.3	1.0
Migrants from rural areas	0.2	1.3	1.7	1.4	1.1	1.0	0.8	0.7	0.7	0.6	0.5	0.4	0.4	0.4	1.0
Females with a low socio-economic background	0.2	1.1	1.5	1.2	1.0	0.9	0.7	0.6	0.5	0.5	0.4	0.4	0.4	0.3	0.8

Source: Unpublished tabulations drawn from a 25% sample of the 1970 population census. IBGE, Departamento de Censos.

TABLE IV - 2

SAO PAULO: Average Number of Years of Schooling of Total Population
By Age, Sex and Socio-Economic Characteristics

Socio-Economic Characteristics \ Age	5 - 9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70 & Over	Total
Total Males - Non-farm	0.6	3.7	5.4	5.6	5.2	4.8	4.5	4.3	4.0	3.7	3.6	3.3	3.1	2.7	4.0
Migrants from urban areas	0.6	3.7	5.4	5.6	5.4	5.0	4.8	4.6	4.4	4.1	4.1	3.9	3.7	3.3	4.4
Migrants from rural areas	0.5	2.9	3.9	3.5	3.1	2.7	2.4	2.2	1.9	1.7	1.6	1.5	1.4	1.2	2.5
Males with a low socio-economic background	0.5	3.0	4.2	4.3	4.3	3.8	3.3	3.1	2.9	2.4	2.3	1.6	1.5	1.2	3.0
Total Males - Farm	0.4	2.5	3.1	2.7	2.3	2.0	1.7	1.4	1.2	1.1	1.1	1.0	1.0	0.8	1.8
Migrants from rural areas	0.4	2.3	2.7	2.2	1.8	1.5	1.3	1.0	0.9	0.8	0.8	0.8	0.8	0.6	1.3
Males with a low socio-economic background	0.3	2.3	2.7	2.3	2.0	1.6	1.3	1.0	0.8	0.6	0.6	0.7	0.5	0.5	1.7
Total Females - Non-farm	0.6	3.8	5.3	5.3	4.6	4.1	3.7	3.4	3.1	2.7	2.5	2.3	2.1	1.9	3.5
Migrants from urban areas	0.6	3.7	5.1	5.1	4.7	4.3	3.9	3.6	3.4	3.0	2.9	2.6	2.5	2.2	3.8
Migrants from rural areas	0.5	2.9	3.8	3.1	2.5	2.1	1.7	1.5	1.2	1.0	0.9	0.8	0.7	0.6	2.0
Females with a low socio-economic background	0.5	3.1	4.2	3.9	3.1	2.5	2.0	1.7	1.5	1.3	1.2	1.1	1.0	0.9	2.4
Total Females - Farm	0.4	2.5	2.9	2.4	1.9	1.5	1.2	1.0	0.8	0.7	0.7	0.5	0.5	0.4	1.6
Migrants from rural areas	0.4	2.2	2.4	1.9	1.4	1.1	0.9	0.7	0.6	0.5	0.5	0.4	0.3	0.4	1.3
Females with a low socio-economic background	0.4	2.3	2.4	1.9	1.5	1.1	0.9	0.6	0.5	0.4	0.4	0.3	0.3	0.2	1.3

Source: Unpublished tabulations drawn from a 25% sample of the 1970 population census IBGE, Departamento de Censos.

Table IV - 3

PERNAMBUCO: Average Number of Years of Schooling of Total Population
By Age, Sex and Socio-Economic Characteristics

Socio-Economic Characteristics \ Age	5 - 9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70 & Over	Total
Total Males - Non-farm	0.3	2.1	3.8	4.4	4.2	3.7	3.3	3.2	2.9	2.5	2.3	2.2	2.0	1.8	2.7
Migrants from urban areas	0.4	2.5	4.4	5.3	5.3	4.8	4.3	4.1	3.8	3.4	3.2	3.2	2.8	2.6	3.7
Migrants from rural areas	0.1	1.4	2.4	2.6	2.4	2.1	1.9	1.7	1.6	1.4	1.2	1.2	1.0	1.0	1.7
Males with a low socio-economic background	0.2	1.5	2.8	3.3	3.5	3.0	2.3	2.1	1.9	1.8	1.5	0.9	0.6	0.6	1.7
Total Males - Farm	0.1	0.5	0.8	0.7	0.7	0.6	0.5	0.5	0.5	0.4	0.4	0.3	0.3	0.3	0.5
Migrants from rural areas	-	0.4	0.6	0.6	0.7	0.6	0.5	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.5
Males with a low socio-economic background	-	0.4	0.7	0.7	0.7	0.6	0.6	0.4	0.3	0.2	0.2	0.2	0.3	0.2	0.4
Total Females - Non-farm	0.3	2.4	4.0	4.3	3.7	3.1	2.7	2.5	2.2	1.9	1.8	1.6	1.6	1.4	2.6
Migrants from urban areas	0.4	2.7	4.2	4.7	4.3	3.8	3.3	3.2	2.9	2.6	2.5	2.2	2.2	1.9	3.3
Migrants from rural areas	0.2	1.5	2.6	2.6	2.1	1.7	1.4	1.3	1.2	2.9	0.8	0.7	0.8	0.6	1.6
Females with a low socio-economic background	0.2	1.9	3.3	3.3	2.5	1.9	1.5	1.4	1.2	1.0	1.0	0.8	0.9	0.7	1.8
Total Females - Farm	0.1	0.6	1.1	0.9	0.7	0.6	0.5	0.4	0.3	0.2	0.2	0.1	0.1	0.1	0.5
Migrants from rural areas	0.1	0.6	0.9	0.8	0.6	0.5	0.9	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.5
Females with a low socio-economic background	0.1	0.6	1.0	0.8	0.6	0.5	0.4	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.5

Source: Unpublished tabulations drawn from a 25% sample of the 1970 population census, IBGE, Departamento de Ce[illegible]s.

Table V-1

BRAZIL - Enrollment Ratios in Primary Education by Age, Sex and Socio-Economic Characteristics (%)

1970

Socio-Economic Characteristics \ Age	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20-24	25-29	30-34	35 AND Over
Total Males - Non-Farm	12.9	33.4	68.7	83.4	88.2	87.1	78.1	66.7	55.9	41.0	30.2	22.5	16.3	12.1	9.1	4.9	2.1	1.3	0.5
Migrants from urban areas	12.5	33.3	69.4	84.4	89.0	88.4	78.9	66.2	52.4	39.6	28.7	21.1	14.9	10.9	8.2	4.5	2.2	1.3	0.5
Migrants from rural areas	5.5	20.0	51.4	71.7	80.0	81.0	78.7	70.0	59.7	45.4	33.5	25.4	18.4	13.7	10.9	6.5	3.0	1.8	0.6
Males with a low socio-economic background	10.4	27.6	55.4	68.6	73.4	72.0	68.1	59.1	49.7	39.1	29.4	21.9	15.6	11.4	8.6	4.9	2.4	1.3	0.6
Total Males - Farm	3.1	14.7	35.1	47.1	55.5	56.0	59.5	51.5	45.6	34.4	24.2	17.1	11.8	8.4	6.6	3.0	1.0	0.6	0.3
Migrants from rural areas	2.2	12.4	33.5	48.4	56.6	58.6	59.8	52.0	43.3	31.1	20.4	13.7	9.2	6.8	5.3	2.5	0.9	0.6	0.3
Males with a low socio-economic background	2.7	3.0	28.6	38.2	44.8	46.4	49.0	43.5	39.0	30.5	22.2	15.9	11.3	8.1	6.6	5.8	1.6	1.2	0.5
Total Females - Non-Farm	13.6	34.6	69.9	84.4	89.2	87.6	77.8	62.9	47.9	34.2	24.1	17.5	12.7	9.8	7.3	4.0	1.8	1.2	0.5
Migrants from urban areas	13.4	34.3	70.2	85.2	89.5	88.6	76.8	61.7	46.2	31.3	21.5	15.4	11.5	8.9	6.8	3.8	2.0	1.3	0.6
Migrants from rural areas	6.1	20.5	53.4	72.6	80.3	82.1	76.9	65.6	51.4	37.3	26.5	18.9	15.0	11.6	8.9	4.9	2.3	1.6	5.3
Females with a low socio-economic background	11.4	29.5	56.8	70.4	74.7	74.1	68.9	58.6	47.5	35.6	25.8	18.9	13.9	10.6	7.5	3.9	1.8	1.2	0.5
Total Females - Farm	3.5	15.9	35.9	48.1	56.3	56.8	58.3	50.1	42.1	30.7	21.8	15.6	11.1	8.1	6.0	2.6	0.9	0.5	0.2
Migrants from rural areas	2.4	13.5	33.5	48.5	56.1	57.8	56.8	48.1	36.9	24.6	15.8	10.9	7.3	5.4	4.0	1.7	0.6	0.4	0.2
Females with a low socio-economic background	3.1	13.7	29.3	39.1	45.6	47.4	48.8	43.1	37.3	28.1	20.8	14.9	10.6	77.6	5.6	2.3	0.7	0.4	0.2

Source: Unpublished tabulations drawn from a 25% sample of the 1970 population census IBGE, Departamento de Censos.

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Table V-2

BRAZIL - Enrollment Ratios in Lower Secondary Education by Age, Sex and Socio-Economic Characteristics (1)

1970

Socio-Economic Characteristics \ Age	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20-24	25-29	30-34	35 and Over
Total Males - Non-Farm	-	-	-	-	-	2.1	11.7	21.6	31.0	35.9	35.2	31.6	25.5	18.4	13.4	6.6	2.2	1.1	0.3
Migrants from urban areas	-	-	-	-	-	2.1	12.7	23.0	33.3	37.8	37.8	32.9	25.9	18.7	13.0	6.4	2.4	1.2	0.3
Migrants from rural areas	-	-	-	-	-	0.7	4.7	9.7	15.5	19.7	20.9	19.6	16.6	12.5	9.3	4.8	1.8	0.8	0.2
Males with a low socio-economic background	-	-	-	-	-	1.0	6.2	11.8	18.1	22.1	22.5	21.5	17.9	13.1	10.2	5.5	2.1	0.9	0.3
Total Males - Farm	-	-	-	-	-	0.2	1.1	2.3	4.0	4.7	4.6	4.5	3.8	2.6	2.2	0.9	0.2	0.1	-
Migrants from rural areas	-	-	-	-	-	0.2	1.0	1.8	3.4	3.8	4.0	3.6	3.2	2.1	1.6	0.7	0.2	0.1	-
Males with a low socio-economic background	-	-	-	-	-	0.1	0.8	1.5	2.6	3.2	3.2	3.2	2.9	2.0	1.9	1.0	0.4	0.2	-
Total Females - Non-Farm	-	-	-	-	-	2.3	12.8	23.1	31.8	35.7	32.7	26.8	20.5	14.8	10.2	4.8	1.6	0.8	0.2
Migrants from urban areas	-	-	-	-	-	2.4	13.3	23.9	32.2	35.7	32.0	26.2	19.2	13.9	9.3	4.3	1.6	0.9	0.2
Migrants from rural areas	-	-	-	-	-	0.8	5.0	10.3	15.7	18.3	17.5	15.3	12.9	9.6	7.1	3.5	1.2	0.6	1.0
Females with a low socio-economic background	-	-	-	-	-	1.2	7.1	13.7	20.3	24.4	23.7	21.2	17.1	13.1	9.6	4.2	1.4	0.6	0.1
Total Females - Farm	-	-	-	-	-	0.2	1.3	2.5	3.8	4.2	4.2	3.6	3.2	2.4	2.0	0.9	0.2	0.1	-
Migrants from rural areas	-	-	-	-	-	0.2	0.9	2.1	2.8	3.2	2.9	2.2	1.9	1.6	1.3	0.6	0.2	0.1	-
Females with a low socio-economic background	-	-	-	-	-	0.1	0.9	1.6	2.6	3.0	3.2	2.7	2.5	1.8	1.6	0.7	0.2	0.1	0.1

Source: Unpublished tabulations drawn from a 25% sample of the 1970 population census, IBGE, Departamento de Censos.

Table V-3

SAO PAULO - Enrollment Ratios in Primary Education by Age, Sex and Socio-Economic Characteristics (%)

1970

Socio-Economic Characteristics \ Age	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20-24	25-29	30-34	35 and Over
Total Males - Non-Farm	5.4	21.0	73.2	91.1	94.6	93.9	78.4	60.4	44.2	30.3	20.7	15.1	11.4	8.8	7.0	4.4	2.2	1.4	0.9
Migrants from urban areas	5.2	20.0	70.1	89.5	93.2	93.1	79.8	63.6	46.3	32.8	22.1	16.0	11.8	8.9	6.7	4.3	2.3	1.4	0.5
Migrants from rural areas	1.6	11.5	54.6	81.8	89.8	90.9	83.6	71.1	54.2	37.2	25.7	18.0	13.0	11.0	8.7	6.0	3.3	2.1	0.6
Males with a low socio-economic background	2.3	11.8	47.4	60.9	63.3	60.7	52.8	39.3	28.3	19.0	12.6	9.4	6.3	5.1	4.0	2.5	1.3	0.8	0.4
Total Males - Farm	1.1	10.7	51.6	75.5	83.0	84.6	78.7	61.5	43.9	26.5	15.3	9.8	6.5	5.9	4.9	2.8	1.3	0.8	0.3
Migrants from rural areas	0.9	8.9	47.4	70.3	78.7	80.6	76.0	61.2	44.5	27.2	15.4	10.0	6.4	6.1	4.9	2.9	1.4	0.7	0.3
Males with a low socio-economic background	0.7	7.5	35.6	53.2	58.0	59.8	54.9	43.5	31.1	18.4	11.1	7.4	4.6	4.6	4.1	2.6	1.6	0.9	0.1
Total Females - Non-Farm	5.3	21.1	72.9	91.0	94.4	94.0	73.1	53.1	35.1	22.8	15.0	10.7	8.1	6.1	5.0	3.8	1.5	1.1	0.6
Migrants from urban areas	5.4	20.5	70.5	89.5	93.5	93.2	76.2	56.9	38.5	24.5	15.7	10.8	8.5	6.1	4.8	3.8	1.5	1.1	0.6
Migrants from rural areas	1.9	11.9	53.2	80.7	89.1	90.4	80.0	62.7	43.2	27.6	17.3	12.6	9.3	7.6	6.6	3.7	1.9	1.5	0.7
Females with a low socio-economic background	2.3	12.3	46.8	62.5	64.8	61.9	50.1	35.2	22.3	14.5	4.2	6.6	4.9	3.9	3.2	1.8	1.2	0.9	0.4
Total Females - Farm	1.1	11.4	50.8	74.1	82.1	81.6	71.0	51.3	32.1	17.5	9.7	6.3	4.6	3.5	3.0	1.5	0 5	0.4	0.2
Migrants from rural areas	1.0	11.0	46.1	71.4	78.3	79.3	70.2	50.7	33.4	18.1	9.5	5.9	4.1	3.1	2.9	1.3	0.4	0.4	0.2
Females with a low socio-economic background	0.6	7.9	35.5	51.9	57.7	58.4	50.2	35.9	23.4	12.4	7.3	4.5	3.6	2.5	2.2	1.1	0.4	0.2	0.1

Source: Unpublished tabulations drawn from a 25% sample of the 1970 population census, IBGE, Departamento de Censos.

Table V-4

SAO PAULO - Enrollment Ratios in Lower Secondary Education by Age, Sex and Socio-Economic Characteristics (%)

1970

Socio-Economic Characteristics \ Age	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20-24	25-29	30-34	35 and Over
Total Males - Non-Farm	-	-	-	-	-	1.5	16.1	30.1	40.0	42.6	38.5	32.0	23.6	16.5	11.4	5.1	1.6	.8	0.2
Migrants from urban areas	-	-	-	-	-	1.4	14.7	26.9	37.9	39.3	37.3	30.7	22.6	15.6	10.5	4.6	1.6	0.8	0.2
Migrants from rural areas	-	-	-	-	-	0.5	5.6	12.8	18.3	21.8	21.1	18.5	14.7	10.6	7.7	3.7	1.3	0.6	0.1
Males with a low socio-economic background	-	-	-	-	-	0.7	7.8	14.6	19.6	21.7	18.4	15.7	11.3	8.2	5.7	2.7	0.9	0.4	0.1
Total Males - Farm	-	-	-	-	-	0.3	3.4	7.0	10.6	11.3	10.4	9.0	7.0	4.7	3.1	1.5	0.4	0 2	-
Migrants from rural areas	-	-	-	-	-	0.2	0.9	4.1	7.3	7.6	7.7	6.9	5.7	3.6	2.2	1.1	0.2	0.1	-
Males with a low socio-economic background	-	-	-	-	-	0.2	2.2	4.8	7.3	7.7	7.4	5.9	5.2	3.1	2.4	1.4	0.6	0.1	-
Total Females - Non-Farm	-	-	-	-	-	1.5	17.8	32.3	40.0	44.3	33.9	25.6	17.4	12.3	7.6	3.4	1.1	0 5	0.1
Migrants from urban areas	-	-	-	-	-	1.3	15.8	28.4	35.7	36.4	30.8	23.7	15.8	11.0	6.7	2.9	1.1	0.6	0.1
Migrants from rural areas	-	-	-	-	-	0.5	6.6	12.7	17.9	18.8	16.9	13.6	10.8	7.1	5.1	2.4	0.9	0.3	0.1
Females with a low socio-economic background	-	-	-	-	-	0.7	8.7	16.2	20.2	21.1	17.2	13.5	9.1	7.1	4.5	2.0	0.8	0.3	-
Total Females - Farm	-	-	-	-	-	0.4	3.7	6.3	8.6	9.6	7.7	5.6	4.5	3.2	2.2	0.8	0.2	0.1	-
Migrants from rural areas	-	-	-	-	-	0.3	2.1	4.3	5.6	6.2	4.6	3.2	2.7	2.1	1.6	0.6	0.1	-	-
Females with a low socio-economic background	-	-	-	-	-	0.4	2.5	4.1	6.2	6.5	5.6	3.7	3.0	2.0	1.5	0.5	0.2	-	-

Source: Unpublished tabulations drawn from a 25% sample of the 1970 population census, IBGE, Departamento de Censos.

Table V-5

PERNAMBUCO - Enrollment Ratios in Primary Education by Age, Sex and Socio-Economic Characteristics (%)

1970

Socio-Economic Characteristics \ Age	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20-24	25-29	30-34	35 And Over
Total Males - Non-Farm	18.7	42.4	64.9	73.4	80.2	79.4	77.4	69.7	60.8	47.7	37.4	29.7	20.7	15.2	10.9	5.1	1.8	..1	0.4
Migrants from urban areas	24.1	46.9	65.2	73.8	81.5	80.1	75.4	67.6	55.7	44.5	36.1	26.8	18.4	14.2	9.7	4.8	1.7	0.9	0.6
Migrants from rural areas	8.9	28.7	42.9	56.0	62.0	64.5	66.3	61.4	58.8	45.2	35.2	60.9	22.5	16.7	14.4	7.7	1.8	1.3	0.4
Males with a low socio-economic background	12.8	31.2	50.6	58.5	63.2	63.6	61.3	[illegible]	[illegible]	40.9	31.4	24.8	17.4	13.1	10.1	5.3	2.4	1.5	0.3
Total Males - Farm	3.6	14.0	24.9	31.6	37.9	40.9	43.3	40.4	38.5	33.8	27.5	22.9	17.1	12.0	8.9	4.2	1.2	0.7	0.3
Migrants from rural areas	2.1	12.0	19.0	27.6	30.6	35.4	35.8	35.5	31.9	26.1	23.6	19.5	15.2	9.1	7.0	3.3	1.1	0.7	0.3
Males with a low socio-economic background	3.1	12.3	22.6	28.3	33.9	37.5	38.5	36.1	34.6	29.7	24.9	20.2	15.6	11.2	9.1	5.2	2.3	1.4	0.5
Total Females - Non-Farm	20.6	44.6	67.2	75.7	81.7	81.9	78.6	70.9	57.6	45.1	32.2	23.2	16.8	12.4	8.3	4.3	1.7	0.9	0.3
Migrants from urban areas	23.5	51.0	69.1	79.4	83.3	82.0	74.8	65.8	51.5	40.6	27.5	17.1	15.6	11.7	7.5	4.4	1.9	1.0	0.3
Migrants from rural areas	11.2	26.5	50.5	55.7	64.2	66.8	64.9	63.5	52.3	41.9	32.9	25.7	17.7	15.4	9.6	5.9	2.4	1.2	0.3
Females with a low socio-economic background	14.4	33.5	52.3	59.9	65.8	65.9	65.3	59.8	52.0	39.4	30.5	21.9	14.1	11.5	8.0	3.7	1.6	40.6	0.2
Total Females - Farm	4.3	16.4	27.5	34.0	41.3	42.9	46.3	45.0	43.9	38.1	31.1	23.9	18.3	13.8	10.3	4.4	1.2	0.7	0.2
Migrants from rural areas	3.4	12.5	21.2	29.7	36.4	39.9	36.3	36.3	37.8	36.7	25.5	22.1	7o.3	10.6	11.7	5.2	1.1	0.4	0.2
Females with a low socio-economic background	3.8	14.4	24.6	30.1	37.0	38.7	41.8	40.6	39.3	34.5	28.2	21.8	16.7	12.5	9.7	4.1	1.2	0.6	0.2

Source: Unpublished tabulations drawn from a 25% sample of the 1970 population census, IBGE, Departamento de Censos.

Table V-6

PERNAMBUCO - Enrollment Ratios in Lower Secondary Education by Age, Sex and Socio-Economic Characteristics (1)

1970

Socio-Economic Characteristics \ Age	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20-24	25-29	30-34	35 and Over
Total Males - Non-Farm	-	-	-	-	-	1.3	5.4	11.2	18.4	24.3	26.9	26.8	23.6	18.1	12.8	6.5	2.0	0.9	0.2
Migrants from urban areas	-	-	-	-	-	2.4	7.7	14.1	23.3	30.0	33.5	31.7	25.9	20.4	14.1	7.7	2.4	0.9	0.3
Migrants from rural areas	-	-	-	-	-	-	2.1	4.8	6.5	12.9	14.3	13.2	10.9	11.0	7.7	4.2	1.2	0.5	0.1
Males with a low socio-economic background	-	-	-	-	-	0.6	3.0	7.0	11.3	14.9	17.4	18.0	15.8	12.3	8.8	5.4	2.1	0.9	0.4
Total Males - Farm	-	-	-	-	-	0.1	0.3	0.4	1.1	1.4	1.6	2.2	1.9	1.5	1.7	0.6	0.2	0.1	-
Migrants from rural areas	-	-	-	-	-	0.3	0.2	0.3	0.7	1.2	1.0	1.2	1.8	1.3	1.3	0.5	0.2	-	-
Males with a low socio-economic background	-	-	-	-	-	-	0.2	0.4	0.8	1.1	1.2	1.6	1.7	1.3	1.6	0.7	0.3	-	-
Total Females - Non-Farm	-	-	-	-	-	1.2	6.9	13.1	21.7	27.4	28.3	27.2	21.9	16.0	11.8	5.3	1.4	0.7	0.2
Migrants from urban areas	-	-	-	-	-	1.0	8.7	16.1	26.3	29.8	29.0	28.8	21.0	15.2	11.7	4.6	1.8	0.9	0.2
Migrants from rural areas	-	-	-	-	-	1.0	2.8	3.4	8.2	14.4	13.3	13.1	13.3	8.8	7.9	3.1	1.1	0.5	0.1
Females with a low socio-economic background	-	-	-	-	-	0.5	3.8	8.3	15.4	19.0	21.8	20.8	17.8	13.6	9.8	4.1	1.1	0.5	0.1
Total Females - Farm	-	-	-	-	-	0.1	0.4	0.8	1.3	1.9	2.6	2.8	3.0	1.9	1.9	0.9	0.2	0.1	-
Migrants from rural areas	-	-	-	-	-	0.2	-	0.4	0.7	1.8	2.6	1.4	1.9	1.2	2.4	0.7	0.1	0.1	0.1
Females with a low socio-economic background	-	-	-	-	-	0.1	0.4	0.7	1.1	1.5	2.1	2.4	2.4	1.5	1.6	0.7	0.1	0.1	-

Source: Unpublished tabulations drawn from a 25% sample of the 1970 population census, IBGE, Departamento de Censos.

Table VI-1

BRAZIL: Public and Private Expenditure on Lower Secondary Education

Cruzeiros — 1970

Socio-Economic Characteristics	Private Costs (Foregone Earnings)	Public Costs (All Levels of Government)	Total Costs
Total Males - Non-farm	1840	540	2380
Migrants from urban areas	2302	540	2842
Migrants from rural areas	2328	540	2868
Males with a low socio-economic background	1807	540	2347
Total Males - Farm	1260	540	1800
Migrants from rural areas	1478	540	2018
Males with a low socio-economic background	1302	540	1842
Total Females - Non-farm	1268	540	1808
Migrants from urban areas	1621	540	2161
Migrants from rural areas	1704	540	2244
Females with a low socio-economic background	1310	540	1850
Total Females - Farm	941	540	1481
Migrants from rural areas	1176	540	1716
Females with a low socio-economic background	941	540	1481

Source: Foregone Earnings: Unpublished tabulations drawn from the 1972 Household Survey
Public Costs: Instituto de Planejamento Economico e Social (IPEA).

Table VI-2

SAO PAULO: Public and Private Expenditures on Lower Secondary Education

Cruzeiros 1970

Socio-Economic Characteristics	Private Costs (Foregone Earnings)	Public Costs (All Levels of Government)	Total Costs
Total Males - Non-farm	2117	670	2787
Migrants from urban areas	2327	670	2997
Migrants from rural areas	2496	670	3166
Males with a low socio-economic background	2519	670	3189
Total Males - Farm	1831	670	2501
Migrants from rural areas	1941	670	2611
Males with a low socio-economic background	1941	670	2611
Total Females - Non-farm	1621	670	2291
Migrants from urban areas	1798	670	2468
Migrants from rural areas	1940	670	2610
Females with a low socio-economic background	1503	670	2173
Total Females - Farm	1420	670	2090
Migrants from rural areas	1774	670	2444
Females with a low socio-economic background	1529	670	2199

Source: Foregone Earnings: Unpublished tabulations drawn from the 1972 Household Survey
Public Costs: Instituto de Planejamento Economico e Social (IPEA).

Table VI-3

PERNAMBUCO: Public and Private Expenditure on Lower Secondary Education

Cruzeiros — 1970

Socio-Economic Characteristics	Private Costs (Foregone Earnings)	Public Costs (All Levels of Government)	Total Costs
Total Males - Non-farm	1176	250	1426
Migrants from urban areas	1537	250	1787
Migrants from rural areas	1588	250	1838
Males with a low socio-economic background	1176	250	1426
Total Males - Farm	832	250	1082
Migrants from rural areas	983	250	1233
Males with a low socio-economic background	908	250	1158
Total Females - Non-farm	596	250	846
Migrants from urban areas	705	250	955
Migrants from rural areas	806	250	1056
Females with a low socio-economic background	647	250	897
Total Females - Farm	647	250	897
Migrants from rural areas	647	250	897
Females with a low socio-economic background	647	250	897

Source: Foregone Earnings: Unpublished tabulations drawn from the 1972 Household Survey
Public Costs: Instituto de Planejamento Economico e Social (IPEA).

Table VI-4
BRAZIL: Public and Private Expenditure on Primary Education

Cruzeiros — 1970

Socio-Economic Characteristics	Private Costs (Foregone Earnings)	Public Costs (All Levels of Government)	Total Costs
Total Males - Non-farm	840	180	1020
Migrants from urban areas	1107	180	1287
Migrants from rural areas	1146	180	1326
Males with a low socio-economic background	770	180	950
Total Males - Farm	529	180	709
Migrants from rural areas	642	180	822
Males with a low socio-economic background	490	180	670
Total Females - Non-farm	739	180	919
Migrants from urban areas	1178	180	1358
Migrants from rural areas	929	180	1109
Females with a low socio-economic background	440	180	620
Total Females - Farm	538	180	718
Migrants from rural areas	670	180	850
Females with a low socio-economic background	538	180	718

Source: Foregone Earnings: Unpublished tabulations drawn from the 1972 Household Survey
Public Costs: Instituto de Planejamento Economico e Social (IPEA).

Table VI-5

SAO PAULO: Public and Private Expenditure on Primary Education

Cruzeiros			1970
Socio-Economic Characteristics	Private Costs (Foregone Earnings)	Public Costs (All Levels of Government)	Total Costs
Total Males - Non-farm	1478	360	1838
Migrants from urban areas	1638	360	1998
Migrants from rural areas	1738	360	2098
Males with a low socio-economic background	1376	360	1736
Total Males - Farm	890	360	1250
Migrants from rural areas	914	360	1274
Males with a low socio-economic background	870	360	1230
Total Females - Non-farm	1210	360	1570
Migrants from urban areas	1422	360	1782
Migrants from rural areas	1260	360	1620
Females with a low socio-economic background	981	360	1341
Total Females - Farm	700	360	1060
Migrants from rural areas	700	360	1060
Females with a low socio-economic background	760	360	1120

Source: Foregone Earnings: Unpublished tabulations drawn from the 1972 Household Survey
Public Costs: Instituto de Planejamento Economico e Social (IPEA).

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Table VI-6

PERNAMBUCO: Public and Private Expenditure on Primary Education

Cruzeiros			1970
Socio-Economic Characteristics	Private Costs (Foregone Earnings)	Public Costs (All Levels of Government)	Total Costs
Total Males - Non-farm	605	125	730
Migrants from urban areas	682	125	807
Migrants from rural areas	797	125	922
Males with a low socio-economic background	528	125	653
Total Males - Farm	470	125	595
Migrants from rural areas	590	125	715
Males with a low socio-economic background	455	125	580
Total Females - Non-farm	294	125	419
Migrants from urban areas	395	125	520
Migrants from rural areas	358	125	483
Females with a low socio-economic background	150	125	275
Total Females - Farm	462	125	587
Migrants from rural areas	700	125	825
Females with a low socio-economic background	462	125	587

Source: Foregone Earnings: Unpublished tabulations drawn from the 1972 Household Survey
Public Costs: Instituto de Planejamento Economico e Social (IPEA).